Engineering Library
GENERAL LIBRARY
DEC 20 1918
UNIV. OF MICH.

THE ARCHITECTURAL FORUM

FOR QUARTER CENTURY THE BRICKBUILDER

RECENT DISTINCTIVE CALIFORNIA SCHOOLHOUSES

PLANNING BUILDINGS FOR DAYLIGHT
By Herbert S. Swan and George W. Tuttle

ENGLEWOOD NEIGHBORHOOD HOUSE
Mann & MacNeille, Architects

U. S. POST OFFICE, ORANGE, N. J.
York & Sawyer, Architects

TWO NEW YORK CITY HOUSES

NOVEMBER 1918

PUBLISHED *by* ROGERS AND MANSON COMPANY
BOSTON AND NEW YORK AND DEVOTED TO THE
ART SCIENCE AND BUSINESS OF BUILDING

CONTENTS, OPP. PAGE 14; ADVERTISING INDEX, PAGE 24

ST. LOUIS
TERRA COTTA CO.

Manufacturers of

Architectural
AND
Ornamental

TERRA COTTA
IN ALL COLORS

We would like to place in your office samples of

"DORIC"
AND
"GOTHIC"
STIPPLED FACE BRICK

This new and beautiful texture is fully considered in our brochure, THE ART OF STIPPLING, a copy of which awaits your request.

WESTERN BRICK COMPANY
DANVILLE ∴ ∴ ∴ ILLINOIS

PFOTENHAUER-NESBIT CO.
ST. JAMES BUILDING, BROADWAY, Cor. 26th ST.
NEW YORK

IMPERVIOUS
FRONT BRICK
ROUGH TEXTURE
SMOOTH FACE
IN RED, BUFF, GRAY, MOTTLED, WHITE, ETC.

Enameled Brick, Fire Brick, Roofing Tiles, Paving Clinkers, Etc.

Genuine "KITTANING" Brick
Genuine "HARVARD" Brick
Genuine "GREENDALE" Rugs
Genuine "Fallston Iron Spot" Brick
Genuine "Fallston Weave Texture" Brick

Established 1856

Henry Maurer & Son
Manufacturers of
HOLLOW TILE
Fireproofing Materials
OF EVERY DESCRIPTION

Flat and Segment Arches
Partitions, Furring, Etc.

Hollow Wall Blocks for Buildings

GENERAL OFFICE
420 East 23d Street - New York

Philadelphia Office, Penna Building

Works . . . . . Maurer, New Jersey

THE ARCHITECTURAL FORUM

VOLUME XXIX NUMBER 5

CONTENTS for NOVEMBER 1918

PLATE ILLUSTRATIONS	Architect	Plate
ENGLEWOOD NEIGHBORHOOD HOUSE, ENGLEWOOD, N. J.	*Mann & MacNeille*	65–67
UNITED STATES POST OFFICE, ORANGE, N. J.	*York & Sawyer*	68–70
TOWN OFFICE BUILDING, READING, MASS.	*Adden & Parker and G. H. Sidebottom*	71–72
PUBLIC LIBRARY BUILDING, READING, MASS.	*Adden & Parker*	73
PUBLIC LIBRARY BUILDING, SEYMOUR, CONN.	*Murphy & Dana*	74
HOUSE IN EAST SEVENTY-FIFTH STREET, NEW YORK, N. Y.	*F. Burrall Hoffman, Jr.*	75–77
HOUSE OF JAMES M. LEOPOLD, ESQ., EAST EIGHTIETH STREET, NEW YORK, N. Y.	*Harry Allan Jacobs*	78–80

LETTERPRESS	Author	Page
MISSION, SANTA BARBARA, CALIFORNIA		*Frontispiece*
THE EDITORS' FORUM		13
RECENT DISTINCTIVE SCHOOLHOUSES IN CALIFORNIA, Part I	*William C. Hays*	111
MODERN GOTHIC ARCHITECTURAL DETAILS Plate X. Entrance Porch, St. Mary's Hall, Boston College, Newton, Mass.	*Ralph H. Hannaford*	Opp. 116
PLANNING BUILDINGS FOR DAYLIGHT	*Herbert S. Swan and George W. Tuttle*	117
THE OFFICES OF ALBERT KAHN, ARCHITECT, DETROIT, MICH.	*George C. Baldwin*	125
HOUSING DEVELOPMENT, U. S. NAVAL ORDNANCE PLANT, CHARLESTON, W. VA. Godley, Haskell & Sedgwick, Architects	*Charles C. May*	131
A COMMUNICATION		136
PLATE DESCRIPTION		137
EDITORIAL COMMENT		138

Published Monthly by
ROGERS AND MANSON COMPANY
85 Water Street, Boston, Mass.
Advertising Department, 42 West 39th Street, New York
Yearly Subscription, payable in advance, U.S.A., Insular Possessions and Cuba $5.00
Canada ..... $5.50 Foreign Countries in the Postal Union 6.00
Single Copies ..... 50 cents All Copies Mailed Flat
Trade Supplied by American News Company and its Branches. Entered as Second Class Matter, March 12, 1892, at the Post Office at Boston, Mass.
Copyright, 1918, by Rogers and Manson Company

MISSION, SANTA BARBARA, CALIFORNIA

THE ARCHITECTURAL FORUM
FOR QUARTER CENTURY THE BRICKBUILDER

VOLUME XXIX NOVEMBER 1918 NUMBER 5

Recent Distinctive Schoolhouses in California

PART I

By WILLIAM C. HAYS

A CYNIC has said that life offers to us nothing but board and lodging. Fortunately, the cynic's is not the only view toward life, for, on the other hand, George de Maurier wrote:

"A little work, a little play
To keep us going — and so good-day!

A little warmth, a little light
Of love's bestowing — and so, good-night!

A little fun to match the sorrow
Of each day's growing — and so, good-morrow!

A little trust that when we die
We reap our sowing! and so — good-bye."

Ripening experience of life may lead us to neither view to the total exclusion of the other. But, on the whole, which of these opinions appeals to us? On the one hand, that of the materialist, or, on the other, that of the idealist? For myself, a philosophy of life which rejects the things of the spirit is inconceivable. Board and lodging! These, differing only in degree, are provided for all creation alike. Life makes indeed a poor host if there is not offered to man's pilgrim soul the further grace of entertainment, in addition to mere food and shelter. Nature, after all, has a leaning toward three-part terms when she symbolizes stability and completeness. Who, among architects, has not been taught that the triangle is the one non-deformable geometric figure? So, if we are to make for completeness of life (surely one function of every thinking man and woman), we must reckon on the spiritual, side by side with the material.

But if we are to dare to mould this fluid plastic something — life — the task must begin while the medium will still respond, that is to say, in youth. And of all youth's environment, scarcely excluding the home, it is in the school where the opportunities offered for influence are greatest. Some one has said, "Whatever you would have appear in the Nation's life you must first put into the schools. . . . Whatever we would have appear in our home life . . . whatever we would have appear in the community life we must also first put into our public schools."

"We reap our sowing!" What a challenge — to those who design schoolhouses, as well as to those who administer and teach in them! Something of California's contribution toward this vital problem of schools and schooling it is the purpose of these papers to point out.

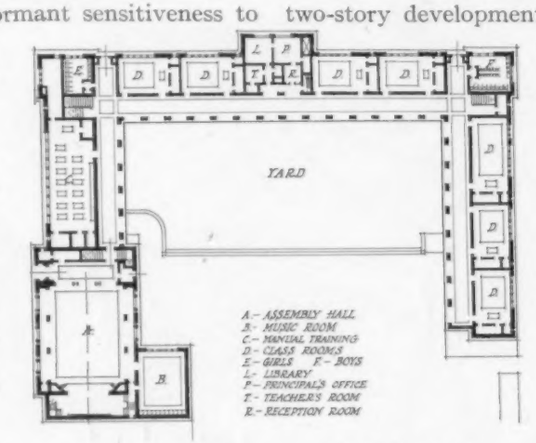
It will have been surmised that the writer believes that the *characteristic* of the better schoolhouses, not only locally, in California, but everywhere, is not of "material" quality, but that they are designed with appreciation of the complex "spiritual" nature of child life. Granting that to a limited extent standardizations, formulæ, tabulations and even handbooks have their useful function, the writer believes that such data, far from being helps, are unsafe weapons when in the hands of a designer who does not realize that laws and rules, once they are fully understood, are for the breaking, when a higher reason dictates. Standardization, which is a useful servant of man, docile while kept in its place, may, like the creature of Frankenstein, develop powers embarrassing to its creators. When one is dealing with so delicate an adjustment as is the child mind, one cannot safely give much force to arguments that are no more than mechanical and statistical.

As a nation at war, we are now hurrying to build standardized ships, and to some extent standardized houses for working men. This we do, not because we believe such ships and houses to be *better* as ships and houses, but because they can now be produced to meet a war emergency more effectively, and at minimized cost of the time and labor that are in normal times properly expended upon design. It would be folly *now* to do otherwise. But when the emergency has passed it would become still greater folly to continue such a course. The need will then be less for quantity than for quality, and normally it is important that a "quality" standard should govern. This fact is important in the designing of schoolhouses. But the quality standard can be attained and maintained only if standardization be regarded as the servant, to move at the bidding of the creative mind. Standardizations, at best, are only part and parcel of certain valid data, from which free choice shall be made. And, after all has been said on behalf of the formulæ-makers, the architect — in his function as an artist — has his own "standardizations," in force equally with those of the educator, or of the educational statistician (the two latter being species quite distinct in themselves).

But if we are to face the problem of completely suiting an environment to the demand of the "child-mind," we have an unachievable task ahead of us. To understand any problem fully is to solve it. But what *is* this "child-mind," adaptation to which is to be the norm, the measure, of our performance? We must admit the impossibility of ever "understanding" fully. Surely no *fixed* or determinable thing, but more variable than the wilful winds of springtime. Who shall say "such and so is the mind of the child, the mind of youth, or of the man"? "Habits, desires, needs and aspirations vary too greatly among mankind to admit of subjecting all to common control. This is natural law." But, by studying and observing many types of children, we may reach some reasonable deductions. These deductions will indicate those conditions which will give the maximum latitude — the possibilities as to genial environment for the average "child-mind." There must be found, too, a way of minimizing conditions that are distressing for the high-strung sensitive pupil; while, for the stolid pupil, the task is the quite different one of awakening the dormant sensitiveness to some degree of appreciation. But while the problem calls for great breadth of vision, the *unrestricted* freedom advocated by some radicals is not only highly illogical, it is contrary to life itself. "Freedom of choice and will" — these are pretty phrases only. There *is* no freedom, for *there is no isolation*. Free yet fettered — such, and such only, can life ever be for social-functioning mankind.

These are questions not solely for the psychologist, for they deeply concern the thinking architect. The physical environment too, and the sense of being physically "at ease," both important phases of the question, lie within the architect's control. In two previous papers it has been shown how a few California architects have answered the problem's challenge. The examples used were intended to illustrate the natural development of one-story and open-air schoolhouses, and were almost entirely grade schools.

It has been pointed out that the one-story school, with open-air rooms and outdoor circulation, is a logical type of school building in great parts of California, responding as it does so well to climatic conditions. From one-story buildings of this type to two stories is an obvious and natural development, for either of several reasons: First, sometimes the ground available is too small to accommodate all of the requirements on one floor; second, the requirements may be so great in extent that a one-story group would be too scattered, even though there was any amount of land at hand. In the better examples the two-story development, where adopted, is found to have most of the advantages found in the one-story type. Many of the advantages of the open-air room may be retained, even where conditions force the compromise of placing certain rooms in a second story extending over part, or even all, of the first-floor area.



First Floor Plan, Frances Willard School

An admirable illustration of the two-story building with open-air circulation is the Frances Willard School in Berkeley, designed by Lewis

Frances Willard Intermediate School, Berkeley, California
Lewis P. Hobart and C. H. Cheney, Associate Architects; Walter H. Ratcliff, City Architect
The closed-in portion of the second floor corridor is used as a girls' lunchroom during the noon hour

Frances Willard Intermediate School

Interior view of open corridor which forms the only hall space, fifteen feet wide, and is used as play space in rainy weather

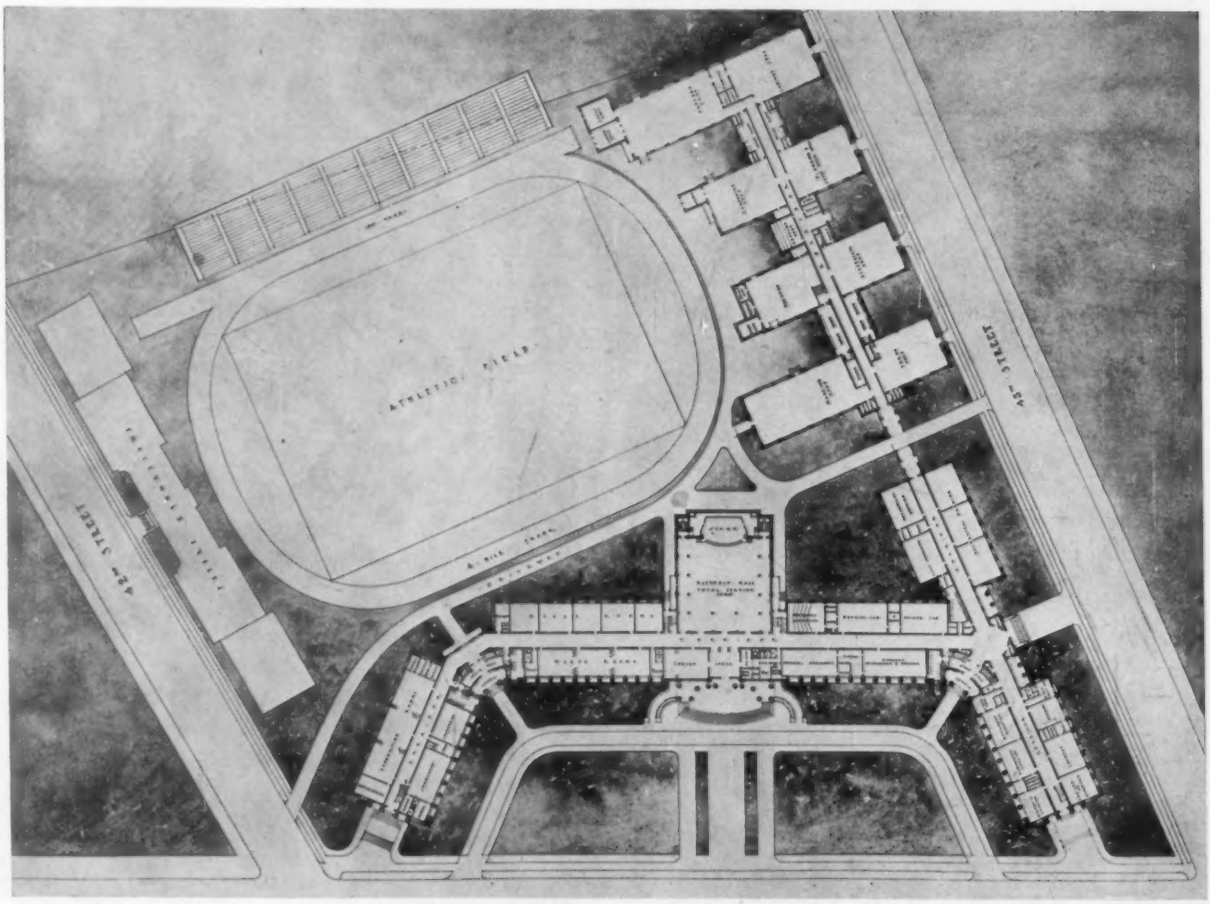
P. Hobart and C. H. Cheney, in association with City Architect Walter H. Ratcliff, Jr. It should be stated that there are certain faults inherent in the site because of which the architects were confronted with a choice of evils. The plot is ample and almost level, rising slightly toward the rear. It commands a view across San Francisco Bay to the Golden Gate, and is on a fine, broad avenue. But on this avenue runs a main car line between Oakland and Berkeley. These cars are inevitably noisy, and so they compelled the adoption of a *parti* in which the bulk of classrooms should be removed as far as possible from the street. The plan adopted is that of a relatively deep U shape, the court opening toward the street and the principal classrooms being in the main body of the building. In the wings are manual training shops, auditorium and, generally speaking, the rooms which are either occupied the least proportion of time, or in which the work is least affected by outside distractions. This would be all very well, except for the fact that the prevailing winds in the neighborhood, at times persistent and heavy, blow from the west and, the site being on the east side of the street, the court lies open to form a wind pocket. Reversal of the building to obviate this defect would have been at the cost of bringing the main classrooms too near the street, while it would also have sacrificed the architectural effect of the building. And the fact must not be ignored that any community has a right to expect that its school buildings shall be dignified and worthy of them, as well as that they shall function well *as schools*. Here the court motif, which is a free adaptation of the *cortile* of Santa Maria della Pace in Rome, has been skilfully studied and the building as a whole is thoroughly satisfying in both mass and color. The classrooms are admirably planned and lighted, as all the other technical problems are well solved.

By a study of this Berkeley school it will be seen that the resemblance between some of the newer schools of the two-story type and the pure one-story type is found, first, in the extensive spreading shape of the plan, and, second, in the use of outdoor circulation. One practical advantage of open-air corridors which is self-evident (once pointed out) is that they insure a complete change of air for all the students at the time that they make changes of classrooms between the successive class periods. Outdoor circulation systems have little virtue, perhaps, unless between rooms which are themselves largely "outdoor rooms." Otherwise, they offer the possibility of chill, if the classrooms are closed and heated. But where the rooms are "open" the type is most desirable, and openness may easily be had by the use of full-area types of windows, placed in either or both of the long walls. (It has been shown in a previous article that where the open-air corridor is amply

Frances Willard Intermediate School

North elevation, showing Auditorium at right and Manual Training Room at left, with studio-lighted Drawing Rooms above

CENTRAL PORTION OF BROADWAY ELEVATION



GROUND FLOOR PLAN AND PLOT LAYOUT

OAKLAND TECHNICAL HIGH SCHOOL, OAKLAND, CALIFORNIA

JOHN J. DONOVAN, ARCHITECT, HENRY HORNBOSTEL CONSULTING ARCHITECT

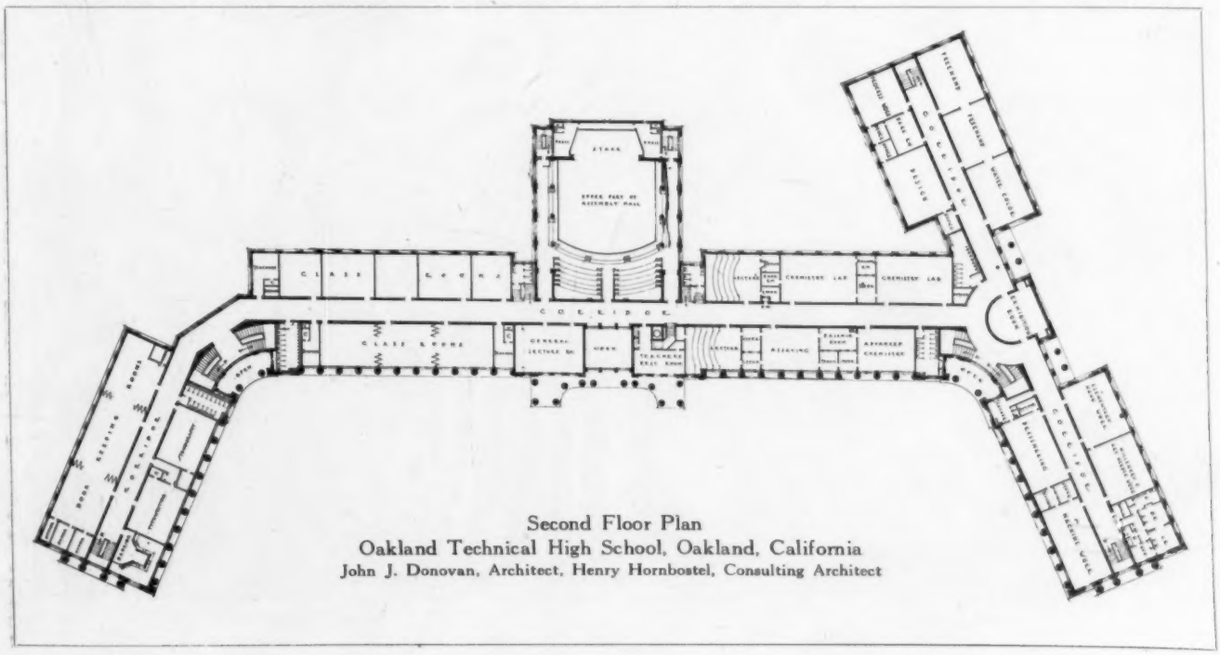
View of the Shops on Forty-fifth Street, Oakland Technical High School

broad there is no inconvenient "bilateral" classroom lighting from openings on the corridor side.)

There have been successful experiments by the designers of certain California high schools and, in several cases, of grammar schools, to arrange groups of separate buildings, connected by arcades or corridors, instead of housing the institution in an uninteresting bulk under one roof. This is especially true of the trade, or technical schools, in which such an arrangement was well nigh a necessity, it being impracticable to house noisy shops within the same building as other classrooms that are intended for intensive study and quiet concentration. It is not improbable that these industrial or manual training high schools, having justified the "group plan" type, show how similar methods might be advantageously made use of and for other, subtler reasons than merely that of avoiding noises. The fact that, psychologically, a group of small buildings is less institutional in look and hence less forbidding, less remote from the home environment and hence less strange, must commend itself favorably to any one giving thought to the matter.

Not far from the Frances Willard School (Berkeley) is the Oakland Technical High School, designed, as was the Berkeley example, by a collaboration of the City Architect and an associate. It is doubtful if such an arrangement is generally satisfactory. Here, however, the associates were of types well complementing each other. Mr. John J. Donovan, the City Architect, had most systematically collected and collated all available data, based on experience everywhere. Mr. Donovan invited Mr. Hornbostel to become his associate and his choice was a most happy one, Mr. Hornbostel bringing to the task not only his keen imaginative power, but also his unexcelled experience along just this line, acquired at the Carnegie Technical Schools in Pittsburgh. The architects were fortunate in the site assigned to or selected by them, whichever the case may have been — for it is large in extent, almost flat and perfectly lighted; the one trouble (and there is too often some such drawback in the conditions offered to the architect) is that Broadway, the main street, is an artery of traffic between Oakland and Berkeley, carrying a noisy line of heavy high-speed cars.

The planning problem was one which resolved itself



Second Floor Plan
Oakland Technical High School, Oakland, California
John J. Donovan, Architect, Henry Hornbostel, Consulting Architect

into three main elements: (1) administrative and academic, (2) technical, (3) athletic. The architects wisely made no attempt to treat these elements alike. Instead, they set about solving each unit in the way which most perfectly satisfied the demands of its program, believing it possible to unify the composition by harmony of materials and by honest study of mass composition, as seen in the large. There was a conflict of *parti* for the reason already mentioned, that Broadway being a noisy street, a classroom building would suffer if placed too far forward, whereas the workshops might easily be so placed, with no serious drawback. But the administrative and academic unit naturally was given the commanding position on the Broadway frontage. The difficulty was met by adopting a shallow U-shaped plan; and by this means the academic classrooms were set back some distance from the street line, while dignity of approach and an effective composition were the architectural results. Slightly more than half of the plot, lying behind the academic building, is divided approximately into thirds, the north third being given over to the shops — the southern portion to the athletic field. As the circulation through the shops is near the center of the group, and these buildings extend approximately north and south, there is the needed diversity of lighting conditions, one part having south and the other north-end light, in addition to bilateral and overhead. It was necessary, too, to have various sizes of shops devoted to different purposes. The uneven lengths are turned toward the athletic field and are so disposed, the shorter ones in the center, as to save all possible room for the length of running track. The shops of even length being uniformly placed, the composition of the street side is quite as interesting and well studied as that facing Broadway.

This group of buildings is a rare combination of two desirable, not to say essential, conditions of good school architecture; first, from every technical consideration it embodies the latest accepted standards, and second, its architecture is distinctive, imaginative and, to an exceptional degree, expressive in structural integrity and the spirit of its times. No school building *could* be better lighted and in passing it might be added that few, if any, are. But this result has been reached without the all too common forcing of apparent window area. This virtue is truest, as it is rarest, of the academic building. One need only to turn the pages of books on school architecture to realize how essentially harsh are the voids and wall surfaces of the average " modern " school building, with their monotony of broad, ill-proportioned windows and repeated narrow mullions. Nearly every architect struggling with the problem has found himself forced to endless experiments in wall textures or color, or both, to give interest to his composition. This struggle has been his tacit acknowledgment that the main proportions are, in themselves, bad. Here is no such condition, for the vertical lines introduced by means of the colonnades give logical structural expression to the building, while the lighting areas are ample. In detail, the building has highly distinctive architectural quality. It was a daring thing to simplify the entablature into its " lowest terms " as done here, but one must admit this form to be more logical under the circumstances than would have been the use of a pure Greek Doric order. Not only is it more logical; it has piquancy, because it is the uncommon thing done in a masterly way — its designer having behind him the soundest knowledge of the convention which he abandoned. There has been some criticism to the effect that the pseudo-cornice, virtually a coping, is a trifle light and also that the irregular columnar spacing at the entrance is unhappy. A building so large must be exceptionally good, when the criticisms heard are of details so minute in nature. Few, if any, technical school buildings are better.

Cooking Room

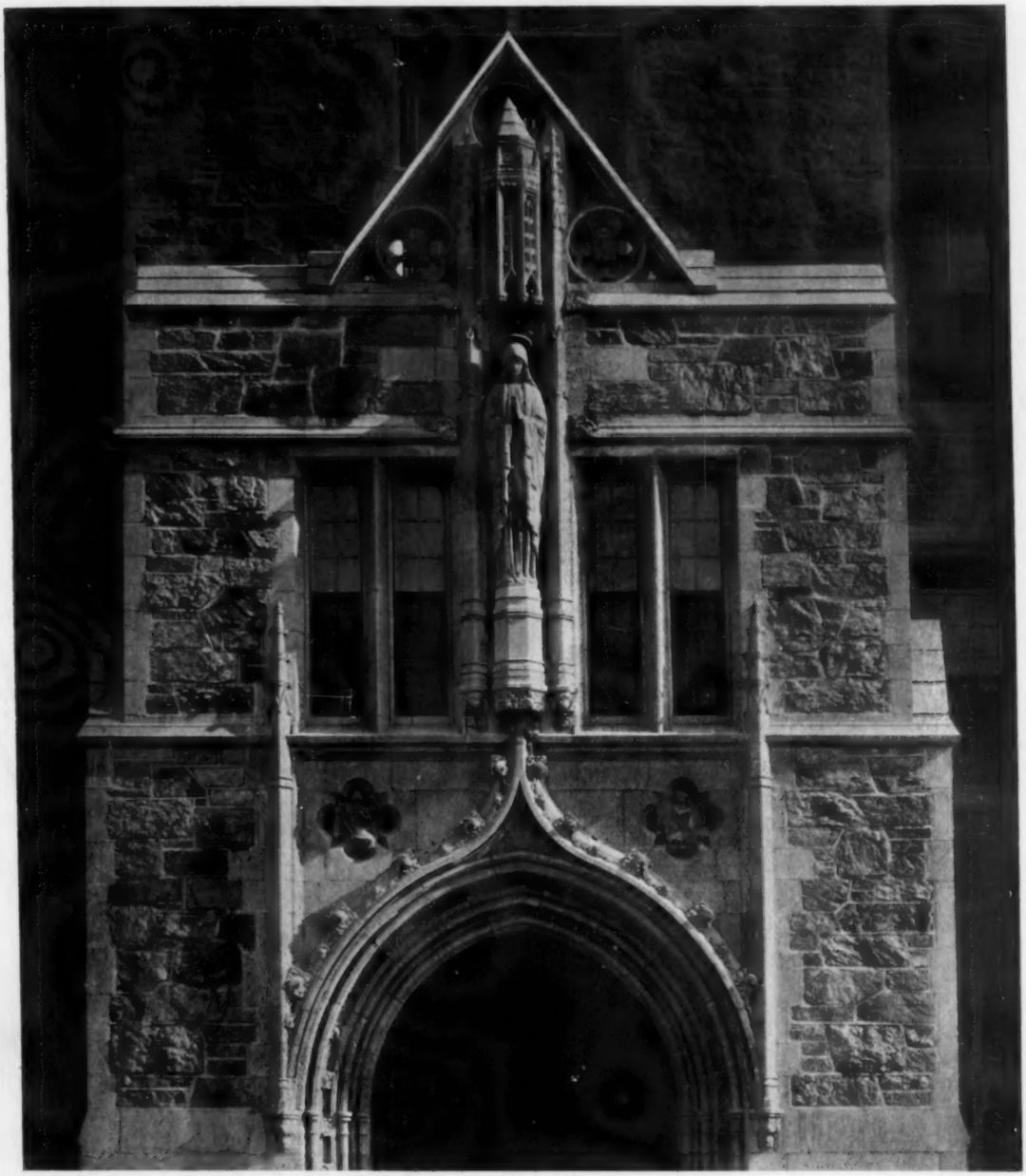
Machine Shop

Oakland Technical High School, Oakland, California

Upper Part of Porch St. Mary's Hall Boston College Maginnis & Walsh Archts

THE FORUM COLLECTION OF MODERN GOTHIC ARCHITECTURAL DETAILS

PLATE TEN



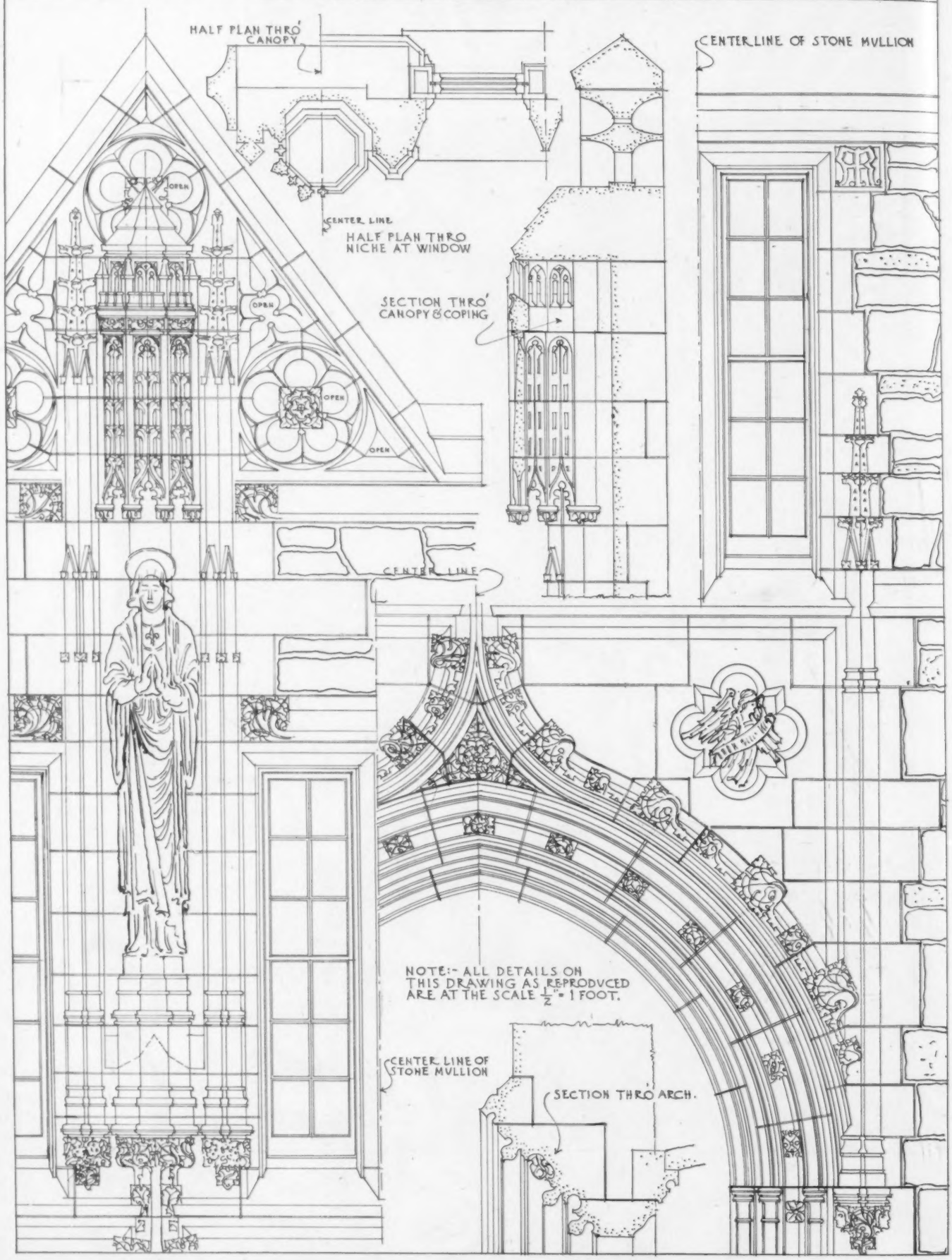
THIS porch provides the center of interest on a collegiate building designed in the spirit of English Tudor Gothic, differing materially from its precedent, however, in having a height of four stories instead of the usual low elevations. The resulting change in proportions has been extended to the component parts, thus the porch has two stories, enabling the arch label mould to be carried up to support a figure of the saint to whom the building is dedicated.

ENTRANCE PORCH, ST. MARY'S HALL, BOSTON COLLEGE, NEWTON, MASS.

MAGINNIS & WALSH, ARCHITECTS

DETAIL DRAWING BY RALPH H. HANNAFORD ON FOLLOWING PAGE

Upper Part of Porch St. Mary's Hall Boston College Maginnis & Walsh Archts



Planning Buildings for Daylight*

By HERBERT S. SWAN AND GEORGE W. TUTTLE

IN the natural illumination of buildings, daylight is more important than sunshine. Daylight is the sunlight diffused and reflected by the sky and clouds as distinct from that received directly from the sun. Sunshine is obtained from but one point, viz., the sun. Daylight, on the other hand, is obtained from the whole visible sphere of the sky. Direct daylight as thus distinguished from sunshine is the subject of this paper.

To what extent will the daylight illumination in a given room be reduced by raising the height of the opposite building one story? How much will it be diminished if the space between the two buildings is made one foot narrower? If the length of the opposite buildings were doubled? What has the shape of a court to do with its lighting efficiency? Which is the better court, the square court or the oblong court? How does an outer court compare with an inner court? With a side yard? What is the effect of a recess? How much light does a forty-inch cornice cut off from the lower stories as compared with a ten-inch cornice? What is the superiority of a large window over a small one? And what has the position of a window to do with the admission and maximum utilization of light within a room?

That elementary questions like these in daylight planning have never been scientifically answered by our building codes, except in a hit-or-miss fashion, is in large measure due to the fact that there have existed no data to show the relative amount of daylight obtained by different kinds of open spaces. It is this deficiency that prompted the preparation of this paper, the object of which will be to present a part of the data necessary for the framing of scientific height and area regulations.†

In making a quantitative analysis of the daylight illumination at any particular point three classes of general conditions must be distinguished from one another: (1) Where the entire quantity is direct light. This condition is rare except in the case of surfaces completely open to the sky. (2) Where the daylight is in part direct light and in part indirect or reflected light. This is the more usual condition so far as concerns the exterior of buildings in built-up communities. The exact proportion of direct and indirect light received depends in each case upon the height of the buildings, the dimensions of the open space, and the coefficients of reflection possessed by the different wall surfaces. (3) Where the entire quantity is indirect or reflected light. This is the case in many rooms where the interior obtains no direct light, all the illumination received being indirect or reflected light.

This paper will be limited strictly to a consideration of direct daylight. Surfaces receiving both direct and indirect light will be considered only in so far as the direct light is concerned. Those receiving only reflected light will not be treated at all.

The Daylight Factor

An obstructed wall, that is, one from which part of the sky illumination is cut off, receives less direct daylight than an unobstructed wall. The direct daylight illumination a wall enjoys diminishes with the extent of the obstruction: If it is completely obstructed it receives no direct illumination whatever; if it is wholly unobstructed it receives the maximum amount of direct sky illumination. The illumination received by an unobstructed wall may therefore be considered unity or one hundred per cent, and that received by an obstructed wall its proper percentage of this unit value.

The Tables

It is on this basis that the accompanying tables have been computed. Each table gives the per cent illumination received at the lower corners of a rectangular court on each of the respective surfaces — the side wall, the end wall, and the bottom.‡ The width of the court has in each case been represented as unity; the height and length of the court, respectively, as multiples of the width.

Table I gives the per cent illumination enjoyed by inner courts and also that enjoyed by outer courts in so far as the illumination is derived from the top of the court; Table II the per cent illumination obtained

* Copyrighted 1918 by Herbert S. Swan. All rights reserved.

† See articles by Herbert S. Swan and George W. Tuttle on Sunlight Engineering in City Planning and Housing, THE ARCHITECTURAL FORUM, June, 1918; Planning Sunlight Cities, *The American City*, September and October, 1917; and Report New York Commission on Building Districts and Restrictions, 1916, pp. 176-188.

‡ The distinct advantages in presenting the illumination for these particular points on each plane or wall surface rather than for some other points are as follows:

1. They are the points on each plane respectively receiving the least illumination.
2. They are the only points on each plane respectively receiving all their illumination from one quarter of the sky. In this respect they are unique. All other points receive their illumination from two or more quarters of the sky.
3. They are the only points at which the illumination, if computed for a large number of courts, will at the same time readily give the direct daylight value of every point in any rectangular court.
4. They are the only points for which the illumination can be computed that will at the same time readily give the direct daylight received by other planes, such as a side yard, a street facade, or the level of a street.
5. They are the only points for which the illumination can be computed that will readily give the amount of daylight received anywhere within a room.
6. They are the only points which readily admit of appropriate allowance being made for the illumination cut off by neighboring obstructions, if any, on all of these different planes.

by outer courts from the open end only, all illumination from the top being considered as cut off; and Table III the per cent illumination received by outer courts from both the top and the open end.*

Application of the Tables

The reader will observe that the illumination received at any point of an inner court is best obtained by considering the court as subdivided at that point by an infinitesimally thin vertical wall into two or more inner courts. The illumination received by each of these theoretical courts, as given directly by the tables, will, if added together, give the illumination at the desired point.† Usually the illumination need be computed for only two of these theoretical courts (See Diagrams 1-5). Where the point for which the illumination is desired is on the bottom of the court away from all the bounding walls, however, the illumination is found from four theoretical courts (See Diagram 6).

The daylight illumination received at any point on the side wall or on the bottom of an outer court through the open end is the illumination received at that point by such a court having a length equal to the distance of the point from the open end. If the total illumination obtained from both the top and the open end of the court at this point is desired, then two additional quantities must be added to the foregoing value. These quantities are the illuminations received at the given point through inner courts into which the outer court would be divided, after closing its open end, by a plane parallel thereto passing through the given point (See Diagram 10 where the total illumination at point M of the outer court is made up of that from the open end plus that from the two inner courts into which it is divided, after closing the open end, by a plane through M, indicated by the dotted line.

To find the illumination received at any point on the end wall of an outer court from the open end, the court should, as in the two foregoing cases, be subdivided at that point by an infinitesimally thin wall into two courts. The illumination received by these two theoretical courts at the desired point will, if added together, give the illumination received through the open end of the court considered. The method of computing the illumination received at this point through the top of the court has already been described.

The accompanying diagrams make it unnecessary to describe in detail the method of using the tables. These diagrams illustrate the method of ascertaining the direct illumination on any surface partially obstructed by other surfaces, situated either parallel or at right angles to the surface considered.

Progress of Daylight Planning

Planning buildings for daylight has been given little thought until recently but the principles to be observed are gradually being developed as its importance is appreciated. Natural illumination has been given considerable attention, however, in the last few years in the designing of factories, hospitals and schools and the improvement in conditions has been marked. As the view that every dark room is a menace to public health seems to be generally accepted, what we need most now is probably the definition of scientific standards of daylight and their incorporation into our building codes rather than popular education in daylight planning itself.

---

* Two formulæ were developed for the computation of the tables. They serve to compute the direct illumination from the sky through any rectangular opening at any point on a plane perpendicular to one of the sides of the opening or on any point of a plane parallel to the plane of the opening in terms of the sky illumination on a vertical plane.

If we let

l = the length of the court
b = the breadth of the court
h = the height of the court

$\tan a = \frac{b}{h}$ $\tan c = \frac{b}{l}$ $\tan x = \frac{l}{h}$

then letting I_R = per cent of illumination from sky on unobstructed surface received through top of court (area lb) on either side (lh) at right angles thereto, at any one of the bottom corners of court

and I_P = per cent of illumination from sky on unobstructed surface, received through open end of court (area hb) on closed end parallel thereto, at either bottom corner. Then we have

$$I_R = \frac{100}{\pi}\left[\arctan\frac{b}{h}\frac{-h}{\sqrt{l^2+h^2}}\arctan\left(\sqrt{\frac{b}{l^2+h^2}}\right)\right]$$

or $$I_R = \frac{100}{\pi}\left[a - \cos x \arctan(\cos x \tan a)\right]$$

and

$$I_P = \frac{100}{\pi}\left[\sqrt{\frac{b}{l^2+b^2}}\arctan\left(\frac{h}{b^2+l^2}\right) + \sqrt{\frac{h}{l^2+h^2}}\arctan\left(\sqrt{\frac{b}{h^2+l^2}}\right)\right]$$

or $$I_P = \frac{100}{\pi}\left[\sin c \arctan(\cot x \cos c) + \cos x \arctan(\sin x \tan c)\right]$$

The illumination received upon certain planes through the top of an inner court, it will be seen, is identically the same as that received upon other planes through the open end of an outer court, provided the height and length of the courts are considered as respectively interchanged. There are three such instances:

(1) The illumination received on the side wall of an inner court through the top is equal to the illumination received on the side wall of an outer court through the open end (compare Tables I A and II A);

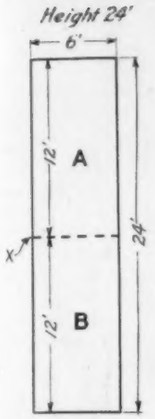
(2) The illumination received at the bottom of a court through the top is equal to the illumination received at the closed end of an outer court through the open end (compare Tables I C and II B); and

(3) The illumination received at the closed end of an outer court through the top is equal to the illumination received at the bottom of an outer court through the open end (compare Tables I B and II C).

† When the illumination is to be found in an inner court at any point above the bottom a horizontal plane through that point is to be considered the bottom for the purpose of the computation. Such a plane does not affect the direct illumination in any way. The illumination received at the given point through the imaginary courts into which we divide the actual court must be found not only for the particular point, but also on the particular plane required.

This division of the court into parts often makes a wall which is a part of the side of the original court become the end of the smaller one. This fact is to be observed in taking out quantities from the tables as the shorter boundary is deemed the end and the longer the side. Thus, on Diagram 2, we add the illumination received at point X on the end wall of Court A to that received at point X on the side wall of Court B to get the illumination from the entire court.

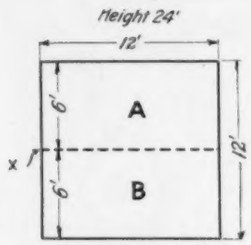
DIAGRAMS 1-3. ILLUMINATION AT ANY POINT OF SIDE WALL, INNER COURT



Plan, Diagram 1

DIAGRAM 1. Add value of illumination at X

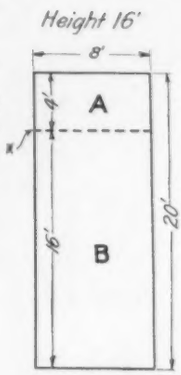
Side wall, inner court A (l=2, h=4)=	.811%
Side wall, inner court B (l=2, h=4)=	.811%
Total,	1.622% Answer



Plan, Diagram 3

DIAGRAM 2. Add value of illumination at X.

End wall, inner court A (l=2, h=4)=	1.529%
Side wall, inner court B (l=2, h=2)=	4.218%
Total,	5.747% Answer

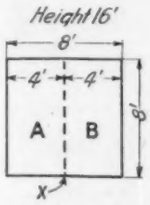


Plan, Diagram 2

DIAGRAM 3. Add value of illumination at X

End wall, inner court A (l=2, h=4)=	1.529%
End wall, inner court B (l=2, h=4)=	1.529%
Total,	3.058% Answer

DIAGRAM 4. ILLUMINATION AT ANY POINT OF END WALL, INNER COURT



Plan, Diagram 4

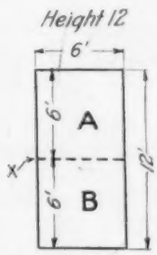
DIAGRAM 4. Add value of illumination at X.

End wall, inner court A (l=2, h=4)=	1.529%
End wall, inner court B (l=2, h=4)=	1.529%
Total,	3.058% Answer

DIAGRAMS 5, 6. ILLUMINATION AT ANY POINT OF BOTTOM, INNER COURT

DIAGRAM 5. Add value of illumination at X.

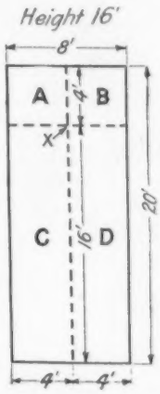
Bottom, inner court A (l=1, h=2)=	11.797%
Bottom, inner court B (l=1, h=2)=	11.797%
Total,	23.594% Answer



Plan, Diagram 5

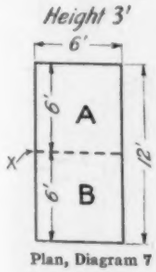
DIAGRAM 6. Add value of illumination at X.

Bottom, inner court A (l=1, h=4)=	3.672%
Bottom, inner court B (l=1, h=4)=	3.672%
Bottom, inner court C (l=4, h=4)=	9.868%
Bottom, inner court D (l=4, h=4)=	9.868%
Total,	27.080% Answer



Plan, Diagram 6

DIAGRAM 7. ILLUMINATION IN A SHALLOW INNER COURT, WIDTH BEING GREATER THAN HEIGHT



Plan, Diagram 7

DIAGRAM 7. Value of illumination on wall at X for court.

A is equal to difference between Vertical wall, one-half obstructed*		50.000%
And Side wall, inner court (l=2, h=2)	4.218%	
End wall, from open end outer court (l=2, h=2)	18.036%	
	22.254%	22.254%
		27.746%
Value of illumination at X for Court. B is equal to that of Court A		27.746%
Total,		55.492% Answer

*The illumination at X in A if opposite side and end wall were removed would be half that on a vertical wall or 50% from which we subtract the illumination cut off by the side wall and that cut off by the end wall to get the actual illumination.

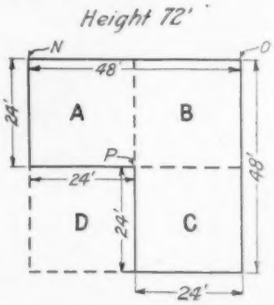
DIAGRAM 8. ILLUMINATION AT ANY POINT OF L-SHAPED INNER COURT

DIAGRAM 8, *Point N*. Add following values of illumination on wall at N

Difference between Side wall, inner court A B C D (l=1, h=1½)	4.975%	
End wall, inner court A D (l=2, h=3)	3.077%	
	1.898%	1.898%
Plus End wall, inner court A (l=1, h=3)		.990%
Total,		2.888% Answer

Point O. Add following values of illumination on wall at O.

Side wall, inner court A B (l=2, h=3)	1.679%	
End wall, inner court B C (l=2, h=3)	3.077%	
	4.756%	4.756%
Subtract Side wall, inner court B (l=1, h=3)		.990%
Balance,		3.766% Answer

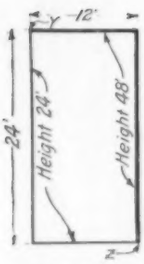


Plan, Diagram 8

Point P. Add following values of illumination on wall at P

End wall, inner court A (l=1, h=3)	.99%
End wall, inner court B (l=1, h=3)	.99%
Total,	1.98% Answer

DIAGRAM 9. ILLUMINATION IN INNER COURT HAVING WALLS OF DIFFERENT HEIGHTS



Plan, Diagram 9

DIAGRAM 9, *Point Y*. Add following values of illumination on wall at Y

Difference between		
End wall, from open end, outer court (l=2, h=4)	21.363%	
And		
End wall, from open end, outer court (l=2, h=2)	18.036%	
	3.327%	3.327%
Plus		
End wall, inner court (l=2, h=4)		1.529%
Total,		4.856%

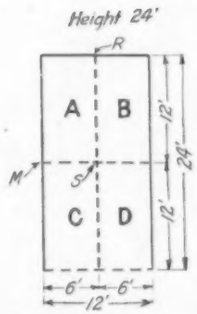
Answer

Point Z. Value of illumination on wall at Z is equal to

End wall, inner court (l=2, h=2)		7.113%
Minus		
Difference between		
End wall, from open end, outer court (l=2, h=4)	21.363%	
And		
End wall, from open end, outer court (l=2, h=2)	18.036%	
	3.327%	3.327%
Balance,		3.786%

Answer

DIAGRAM 10. ILLUMINATION AT ANY POINT OF OUTER COURT



Plan, Diagram 10

DIAGRAM 10, *Point M, Side Wall*. Add following values of illumination at M.

Side wall, outer court C D (l=1, h=2)		16.515%
Side wall, inner court A B (l=1, h=2)		2.784%
Total,		19.299%

Answer

Point R, End Wall. Add following values of illumination at R

End wall, outer court A C (l=4, h=4)		13.727%
End wall, outer court B D (l=4, h=4)		13.727%
Total,		27.454%

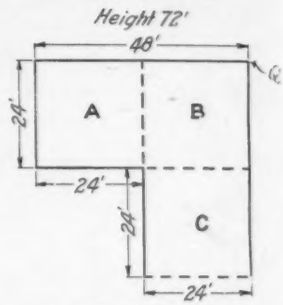
Answer

Point S, Bottom. Add following values of illumination at S.

Bottom, inner court A (l=2, h=4)	6.615%
Bottom, inner court B (l=2, h=4)	6 615%
Bottom, outer court C (l=2, h=4)	18.242%
Bottom, outer court D (l=2, h=4)	18.242%
Total,	49.714%

Answer

DIAGRAM 11. ILLUMINATION AT ANY POINT OF OUTER L-SHAPED COURT



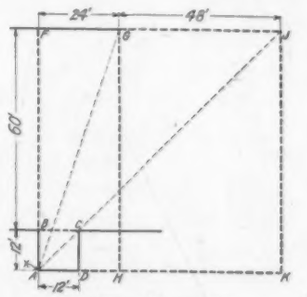
Plan, Diagram 11

DIAGRAM 11.

Point Q. Add following values of illumination on wall at Q.

End wall, inner court A B (l=2,h=3)	3.077%	
Side wall, outer court B C (l=2,h=3)	6.574%	
	9.651%	9.651%
Subtract		
Side wall, inner court B (l=1,h=3)	.990%	
Balance,		8.661%

Answer



Plan, Diagram 12

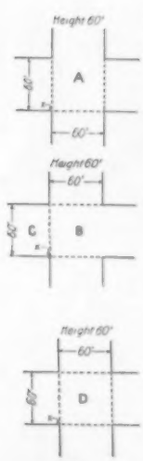
DIAGRAM 12. ILLUMINATION AT ANY POINT OF OUTER COURT, PARTLY OBSTRUCTED AT OPEN END

DIAGRAM 12. Add following values of illumination on wall at X.

Difference between		
Side wall from open end, outer court A F G H (l=3, h=6)	2.465%	
Side wall, from open end, outer court A F G H (l=3, h=1)	.990%	
	1.475%	1.475%
Plus difference between		
Side wall, from open end, outer court A F J K (l=1, h=2)	13.731%	
Side wall, from open end, outer court A F G H (l=3, h=6)	2.465%	
	11.266%	11.266%
Plus		
Side wall, inner court A B C D (l=1, h=2)		2.784%
Total,		15.525%

Answer

DIAGRAM 13. ILLUMINATION ON FRONT OF BUILDING AT STREET INTERSECTION, BUILDINGS OF UNIFORM HEIGHT

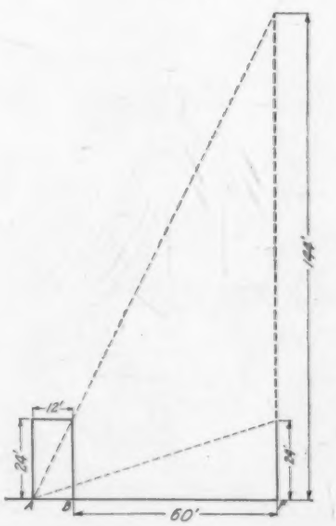


Plan
Diagram 13

DIAGRAM 13. Add following values of illumination at X

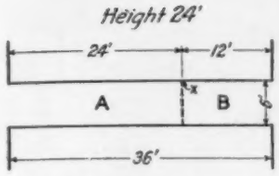
End wall, outer court A (l=inf., h=1)	24.990%	
Side wall, outer court B l=inf., h=1)	14.636%	
Side wall, outer court C (l=inf., h=1)	14.636%	
	54.262%	54.262%
Minus		
Side or end wall, inner court D (l=1, h=1)		11.140%
Balance,		43.122%

Answer



Elevation, Diagram 12

DIAGRAM 14. ILLUMINATION AT ANY POINT ON WALLS OF SIDE YARD OR STREET FACADE IF ILLUMINATION IS NOT OTHERWISE OBSTRUCTED



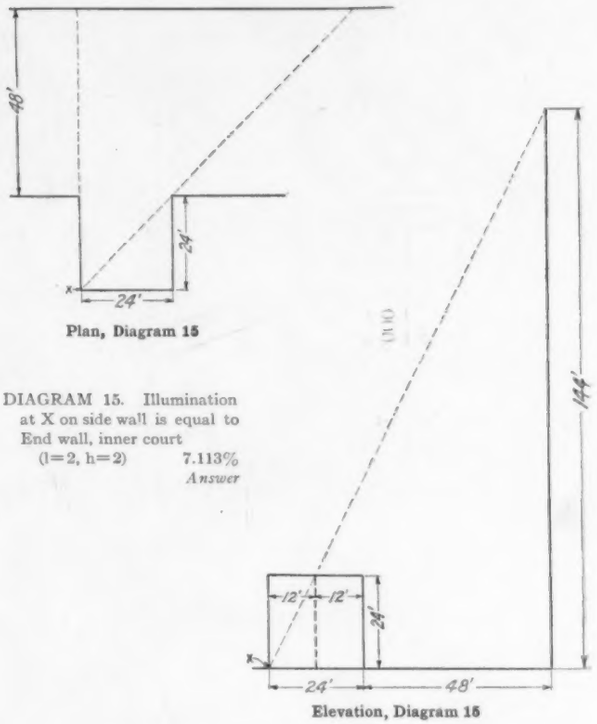
Plan, Diagram 14

DIAGRAM 14. Add following values of illumination at X

Side wall, outer court A (l=4, h=4)	2.430%
Side wall, outer court B (l=2, h=4)	5.715%
Total,	8.145% *Answer*

DIAGRAM 15. ILLUMINATION IN OUTER COURT

(Open end wholly obstructed and top partly obstructed)



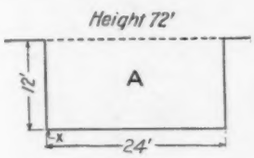
Plan, Diagram 15

Elevation, Diagram 15

DIAGRAM 15. Illumination at X on side wall is equal to End wall, inner court (l=2, h=2) 7.113% *Answer*

DIAGRAM 16. ILLUMINATION ENTERING AN UNOBSTRUCTED OUTER COURT

(Having the side instead of the end open)



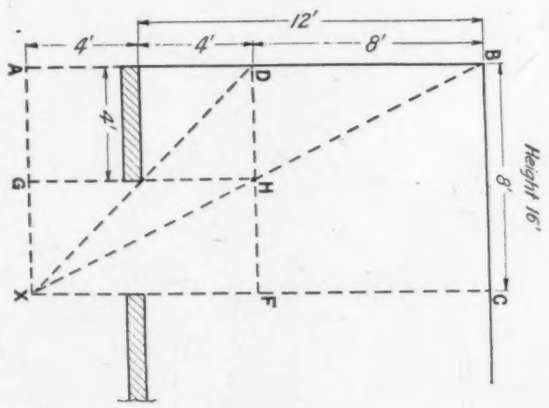
Plan, Diagram 16

DIAGRAM 16. Value of illumination at X on side is equal to

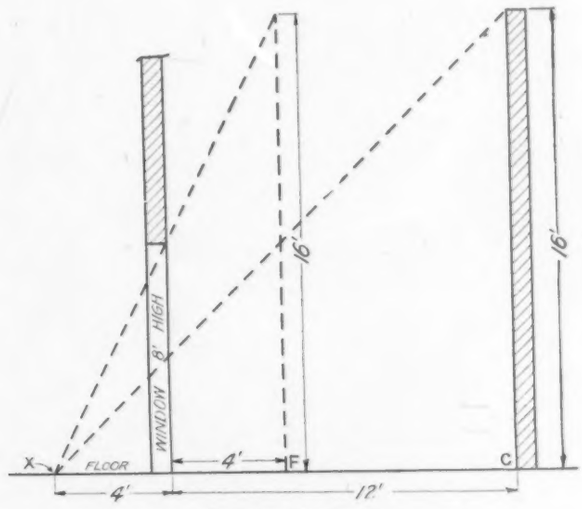
Difference between Vertical wall, one-half obstructed	50%
And Side wall, from open end, outer court (l=2, h=6)	5.188%
Balance,	44.812% *Answer*

DIAGRAM 17. ILLUMINATION WITHIN ROOM ON HORIZONTAL SURFACE THROUGH WINDOW

(Window being situated near end of court)



Plan, Diagram 17



Elevation, Diagram 17

DIAGRAM 17. Value of illumination on floor at X is equal to Difference between

Bottom of inner court A B C X (l=2, h=2)	18.036%
And Bottom of inner court A D F X (l=1, h=2)	11.797%
	6.239% *Answer*

TABLE I — DIRECT DAYLIGHT ILLUMINATION IN INNER COURTS

Expressed as a per cent of the direct daylight illumination received by an unobstructed vertical wall.

A. Side Wall

Length of Court in Terms of Width

Per Cent Illumination at Either End of Wall at Given Distance from Top

Distance down from top in terms of width	0	1	2	3	4	5	6	7	8	9	10	Infinite
0		50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
1	0	11.140	13.731	14.311	14.490	14.559	14.590	14.600	14.618	14.627	14.631	14.636
2	0	2.784	4.218	4.895	4.904	5.140	5.188	5.220	5.243	5.256	5.265	5.279
3	0	.990	1.679	2.075	2.284	2.400	2.465	2.490	2.515	2.531	2.554	2.565
4	0	.450	.811	1.063	1.215	1.313	1.377	1.406	1.438	1.445	1.454	1.493
5	0	.240	.445	.606	.715	.793	.840	.879	.909	.922	.936	.972
6	0	.145	.311	.375	.445	.511	.547	.590	.597	.627	.636	.681
7	0	.090	.172	.250	.304	.345	.384	.409	.429	.438	.447	.502
8	0	.056	.120	.168	.213	.247	.277	.295	.311	.327	.343	.386
9	0	.040	.086	.127	.156	.181	.206	.220	.240	.254	.268	.304
10	0	.034	.065	.093	.118	.138	.161	.181	.188	.193	.200	.209
Infinite	0	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

B. End Wall

Length of Court in Terms of Width

Per Cent Illumination at Either End of Wall at Given Distance from Top

Distance down from top in terms of width	0	1	2	3	4	5	6	7	8	9	10	Infinite
0		50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
1	0	11.140	18.995	21.904	23.154	23.779	24.136	24.356	24.502	24.604	24.677	24.990
2	0	2.784	7.113	9.981	11.627	12.586	13.175	13.556	13.822	14.006	14.143	14.754
3	0	.990	3.077	5.029	6.475	7.459	8.138	8.604	8.940	9.181	9.363	10.238
4	0	.450	1.529	2.765	3.859	4.711	5.359	5.845	6.211	6.484	6.697	7.793
5	0	.240	.861	1.647	2.440	3.122	3.688	4.143	4.522	4.786	5.013	6.284
6	0	.145	.522	1.043	1.606	2.140	2.618	3.022	3.356	3.629	3.859	5.256
7	0	.090	.340	.697	1.106	1.518	1.900	2.475	2.545	2.802	3.022	4.515
8	0	.056	.225	.486	.781	1.100	1.413	1.709	1.965	2.197	2.386	3.952
9	0	.040	.165	.347	.570	.820	1.075	1.313	1.543	1.756	1.938	3.515
10	0	.034	.125	.300	.443	.643	.715	1.047	1.240	1.418	1.584	3.175
Infinite	0	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

C. Bottom of Court

Length of Court in Terms of Width

Per Cent Illumination at Any Corner of Bottom in Court of Given Height

Distance down from top in terms of width	0	1	2	3	4	5	6	7	8	9	10	Infinite
0		50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
1	0	27.690	33.456	34.681	35.040	35.177	35.243	35.281	35.306	35.313	35.315	35.340
2	0	11.797	18.036	20.397	21.363	21.788	22.009	22.131	22.200	22.250	22.275	22.361
3	0	6.163	10.445	12.843	14.090	14.763	15.125	15.352	15.481	15.570	15.629	15.809
4	0	3.672	6.615	8.622	9.868	10.650	11.122	11.420	11.609	11.750	11.834	12.125
5	0	2.418	4.502	6.193	7.227	8.002	8.522	8.875	9.113	9.284	9.395	9.811
6	0	1.704	3.238	4.504	5.477	6.195	6.711	6.990	7.350	7.550	7.693	8.222
7	0	1.238	2.211	3.443	4.265	4.913	5.409	5.552	6.063	6.272	6.427	7.075
8	0	.963	1.890	2.704	3.400	3.968	4.427	4.781	5.065	5.284	5.475	6.195
9	0	.770	1.506	2.179	2.768	3.268	3.681	4.020	4.290	4.504	4.684	5.515
10	0	.629	1.231	1.786	2.293	2.734	3.114	3.418	3.679	3.893	4.070	4.979
Infinite	0	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

TABLE II — DIRECT DAYLIGHT ILLUMINATION ENTERING OPEN END OF OUTER COURTS

Expressed as a per cent of the direct daylight illumination received by an unobstructed vertical wall.

A. Side Wall

Length of Court in Terms of Width

Per Cent Illumination at Inner End of Wall at Given Distance from Top

Distance down from top in terms of width	0	1	2	3	4	5	6	7	8	9	10	Infinite
0		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
1	50	11.140	2.784	.990	.450	.240	.145	.090	.056	.040	.034	.000
2	50	13.731	4.218	1.679	.811	.445	.311	.172	.120	.086	.065	.000
3	50	14.311	4.895	2.075	1.063	.606	.375	.250	.168	.127	.093	.000
4	50	14.490	4.904	2.284	1.215	.715	.445	.304	.213	.156	.118	.000
5	50	14.559	5.140	2.400	1.313	.793	.511	.345	.247	.181	.138	.000
6	50	14.590	5.188	2.465	1.377	.840	.547	.384	.277	.206	.161	.000
7	50	14.600	5.220	2.490	1.406	.879	.590	.409	.295	.220	.181	.000
8	50	14.618	5.243	2.515	1.438	.909	.597	.429	.311	.240	.188	.000
9	50	14.627	5.256	2.531	1.445	.922	.627	.438	.327	.254	.193	.000
10	50	14.631	5.265	2.554	1.454	.936	.636	.447	.343	.268	.200	.000
Infinite	50	14.636	5.279	2.565	1.493	.972	.681	.502	.386	.304	.209	.000

B. End Wall

Length of Court in Terms of Width

Per Cent Illumination at Either End of Wall at Given Distance from Top

Distance down from top in terms of width	0	1	2	3	4	5	6	7	8	9	10	Infinite
0		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
1	50	27.690	11.797	6.163	3.672	2.418	1.704	1.238	.963	.770	.629	.000
2	50	33.456	18.036	10.445	6.615	4.502	3.238	2.211	1.890	1.506	1.231	.000
3	50	34.681	20.397	12.843	8.622	6.193	4.504	3.443	2.704	2.179	1.786	.000
4	50	35.040	21.363	14.090	9.868	7.227	5.477	4.265	3.400	2.768	2.293	.000
5	50	35.177	21.788	14.763	10.650	8.002	6.195	4.913	3.968	3.268	2.734	.000
6	50	35.243	22.009	15.125	11.122	8.522	6.711	5.409	4.427	3.681	3.114	.000
7	50	35.281	22.131	15.352	11.420	8.875	6.990	5.552	4.781	4.020	3.418	.000
8	50	35.306	22.200	15.481	11.609	9.113	7.350	6.063	5.065	4.290	3.679	.000
9	50	35.313	22.250	15.570	11.750	9.284	7.550	6.272	5.284	4.504	3.893	.000
10	50	35.315	22.275	15.629	11.834	9.395	7.693	6.427	5.475	4.684	4.070	.000
Infinite	50	35.340	22.361	15.809	12.125	9.811	8.222	7.075	6.195	5.515	4.979	.000

C. Bottom of Court

Length of Court in Terms of Width

Per Cent Illumination at Either Corner of Bottom at Inner End in Court of Given Height

Distance down from top in terms of width	0	1	2	3	4	5	6	7	8	9	10	Infinite
0		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
1	50	11.140	2.784	.990	.450	.240	.145	.090	.056	.040	.034	.000
2	50	18.995	7.113	3.077	1.529	.861	.522	.340	.225	.165	.125	.000
3	50	21.904	9.981	5.029	2.765	1.647	1.043	.697	.486	.347	.300	.000
4	50	23.154	11.627	6.475	3.859	2.440	1.606	1.106	.781	.570	.443	.000
5	50	23.779	12.586	7.459	4.711	3.122	2.140	1.518	1.100	.820	.643	.000
6	50	24.136	13.175	8.138	5.359	3.688	2.618	1.900	1.413	1.075	.715	.000
7	50	24.356	13.556	8.604	5.845	4.143	3.022	2.475	1.709	1.313	1.047	.000
8	50	24.502	13.822	8.940	6.211	4.522	3.356	2.545	1.965	1.543	1.240	.000
9	50	24.604	14.006	9.181	6.484	4.786	3.629	2.802	2.197	1.756	1.418	.000
10	50	24.677	14.143	9.363	6.697	5.013	3.859	3.022	2.386	1.938	1.584	.000
Infinite	50	24.990	14.754	10.238	7.793	6.284	5.256	4.515	3.952	3.515	3.175	.000

TABLE III — DIRECT DAYLIGHT ILLUMINATION IN OUTER COURTS

Expressed as a per cent of the direct daylight illumination received by an unobstructed vertical wall.

A. Side Wall

Length of Court in Terms of Width

Per Cent Illumination at Inner End of Wall at Given Distance from Top

Distance down from top in terms of width	0	1	2	3	4	5	6	7	8	9	10	Infinite
0		50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
1	50	22.280	16.515	15.301	14.940	14.799	14.735	14.690	14.674	14.667	14.665	14.636
2	50	16.515	8.436	6.574	5.715	5.585	5.499	5.392	5.363	5.342	5.330	5.279
3	50	15.301	6.574	4.150	3.347	3.006	2.840	2.740	2.683	2.658	2.647	2.565
4	50	14.940	5.715	3.347	2.430	2.028	1.822	1.710	1.651	1.601	1.572	1.493
5	50	14.799	5.585	3.006	2.028	1.586	1.351	1.224	1.156	1.103	1.074	.972
6	50	14.735	5.499	2.840	1.822	1.351	1.094	.974	.874	.833	.797	.681
7	50	14.690	5.392	2.740	1.710	1.224	.974	.818	.724	.658	.628	.502
8	50	14.674	5.363	2.683	1.651	1.156	.874	.724	.622	.567	.531	.386
9	50	14.667	5.342	2.658	1.601	1.103	.833	.658	.567	.508	.461	.304
10	50	14.665	5.330	2.647	1.572	1.074	.797	.628	.531	.461	.400	.209
Infinite	50	14.636	5.279	2.565	1.493	.972	.681	.502	.386	.304	.209	.000

B. End Wall

Length of Court in Terms of Width

Per Cent Illumination at Either End of Wall at Given Distance from Top

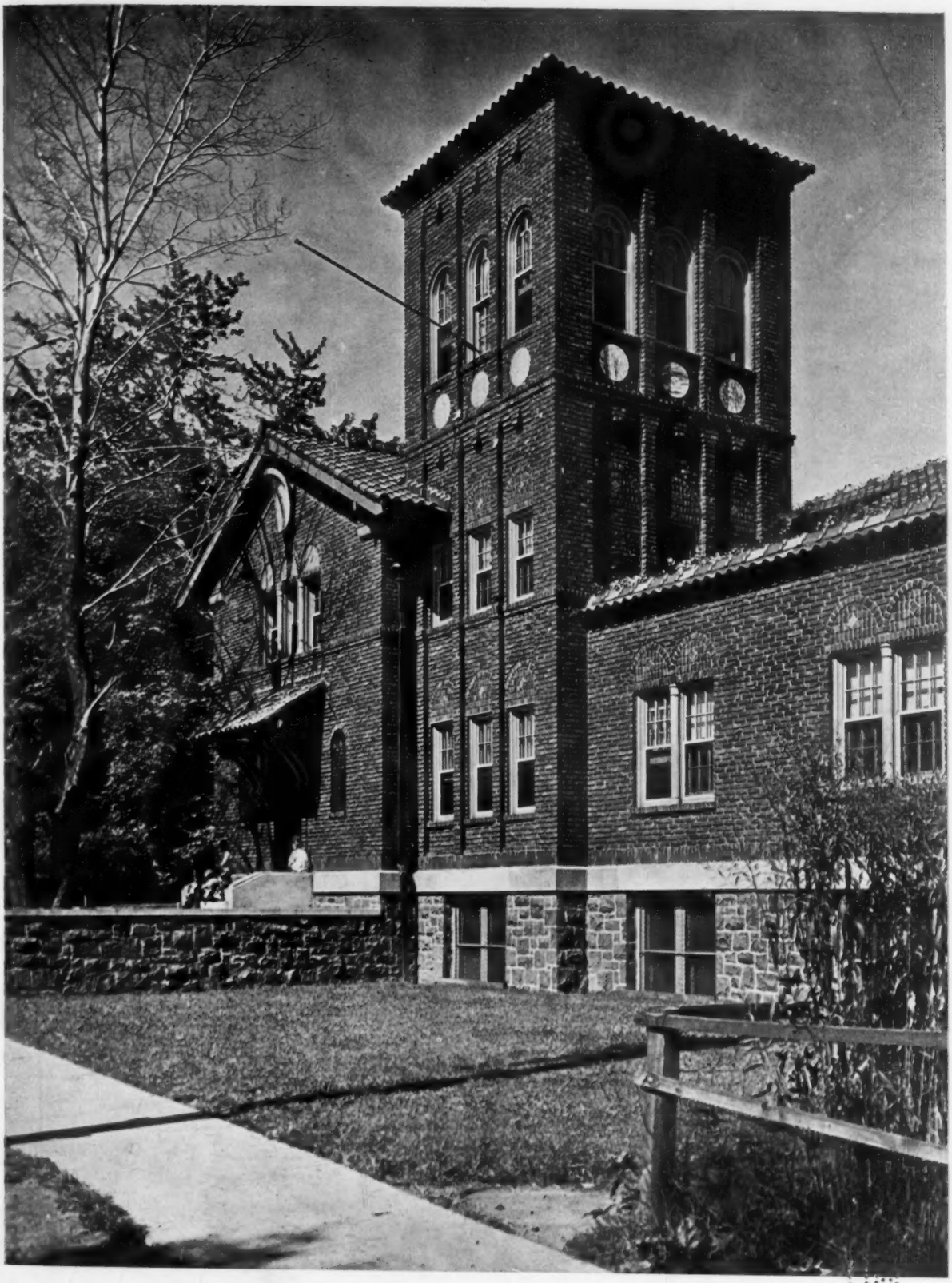
Distance down from top in terms of width	0	1	2	3	4	5	6	7	8	9	10	Infinite
0		50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
1	50	38.830	30.792	28.067	26.826	26.197	25.840	25.594	25.465	25.374	25.306	24.990
2	50	36.240	25.149	20.426	18.242	17.088	16.413	15.767	15.712	15.512	15.374	14.754
3	50	35.671	23.474	17.872	15.097	13.652	12.642	12.047	11.644	11.360	11.149	10.238
4	50	35.490	22.892	16.855	13.727	11.938	10.836	10.110	9.611	9.252	8.990	7.793
5	50	35.417	22.649	16.410	13.090	11.124	9.883	9.056	8.490	8.054	7.747	6.284
6	50	35.388	22.531	16.168	12.728	10.662	9.329	8.431	7.783	7.310	6.973	5.256
7	50	35.371	22.471	16.049	12.526	10.393	8.890	8.027	7.326	6.822	6.440	4.515
8	50	35.362	22.425	15.967	12.390	10.213	8.763	7.772	7.030	6.487	6.065	3.952
9	50	35.353	22.415	15.917	12.320	10.104	8.625	7.585	6.827	6.260	5.831	3.515
10	50	35.349	22.400	15.929	12.277	10.038	8.408	7.474	6.715	6.102	5.654	3.175
Infinite	50	35.340	22.361	15.809	12.125	9.811	8.222	7.075	6.195	5.515	4.979	.000

C. Bottom of Court

Length of Court in Terms of Width

Per Cent Illumination at Either Corner of Bottom at Inner End in Court of Given Height

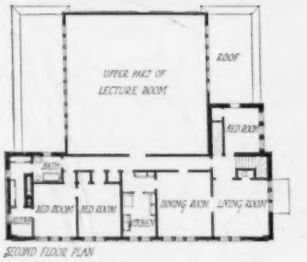
Distance down from top in terms of width	0	1	2	3	4	5	6	7	8	9	10	Infinite
0		50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
1	50	38.830	36.240	35.671	35.490	35.417	35.388	35.371	35.362	35.353	35.349	35.340
2	50	30.792	25.149	23.474	22.892	22.649	22.531	22.471	22.425	22.415	22.400	22.361
3	50	28.067	20.426	17.872	16.855	16.410	16.168	16.049	15.967	15.917	15.929	15.809
4	50	26.826	18.242	15.097	13.727	13.090	12.728	12.526	12.390	12.320	12.277	12.125
5	50	26.197	17.088	13.652	11.938	11.124	10.662	10.393	10.213	10.104	10.038	9.811
6	50	25.840	16.413	12.642	10.836	9.883	9.329	8.890	8.763	8.625	8.408	8.222
7	50	25.594	15.767	12.047	10.110	9.056	8.431	8.027	7.772	7.585	7.474	7.075
8	50	25.465	15.712	11.644	9.611	8.490	7.783	7.326	7.030	6.827	6.715	6.195
9	50	25.374	15.512	11.360	9.252	8.054	7.310	6.822	6.487	6.260	6.102	5.515
10	50	25.306	15.374	11.149	8.990	7.747	6.973	6.440	6.065	5.831	5.654	4.979
Infinite	50	24.990	14.754	10.238	7.793	6.284	5.256	4.515	3.952	3.515	3.175	.000

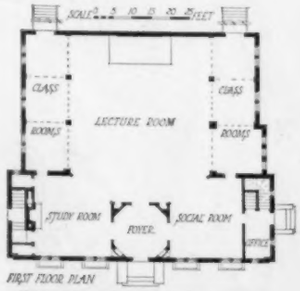


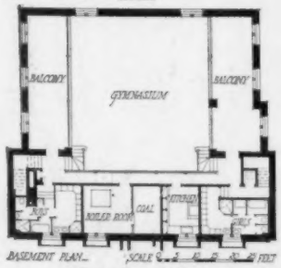
ENGLEWOOD NEIGHBORHOOD HOUSE, ENGLEWOOD, N. J.

MANN & MacNEILLE, ARCHITECTS

GENERAL VIEW OF EXTERIOR





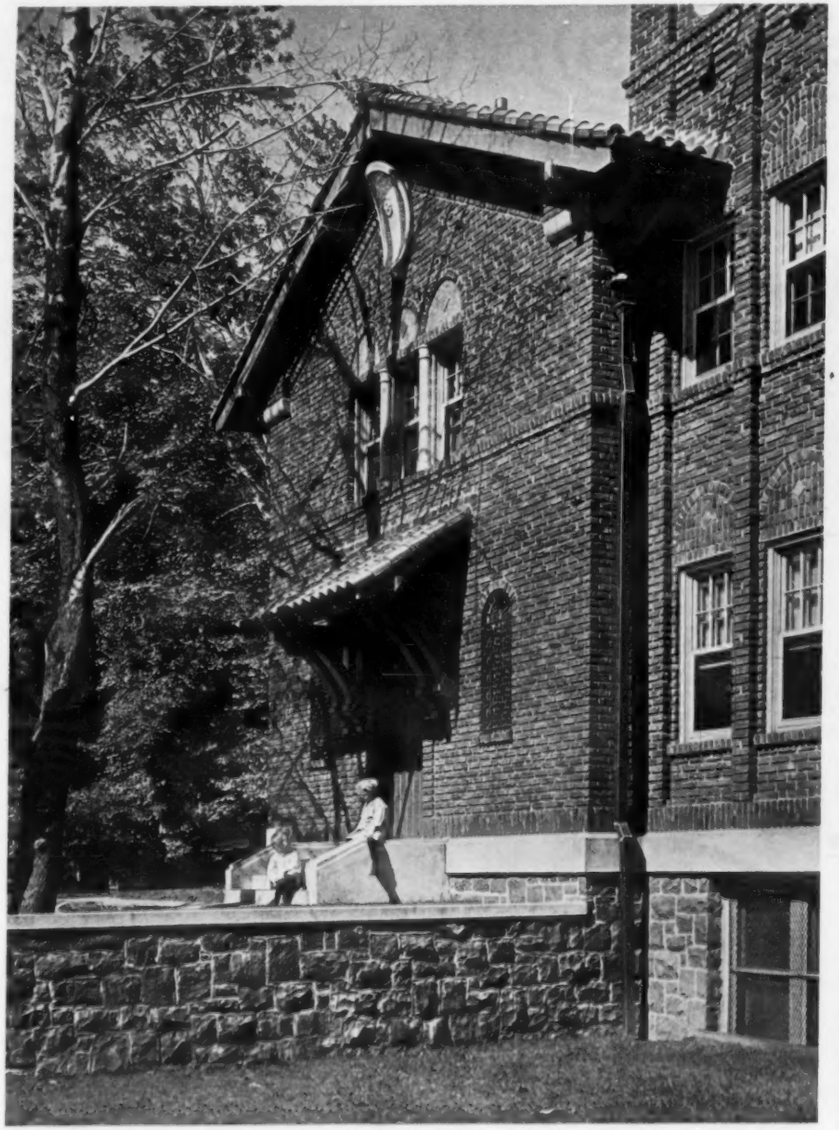


FLOOR PLANS

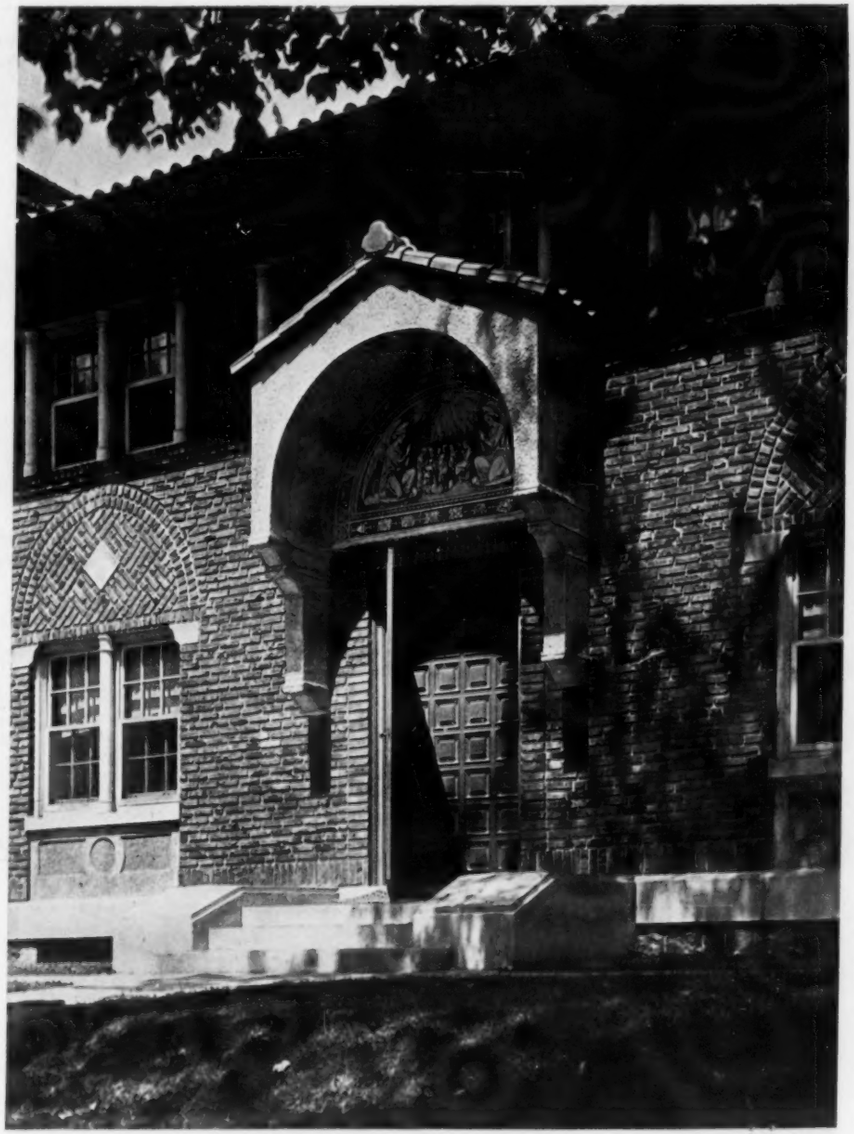
INTERIOR OF LECTURE ROOM

ENGLEWOOD NEIGHBORHOOD HOUSE, ENGLEWOOD, N. J.

MANN & MacNEILLE, ARCHITECTS



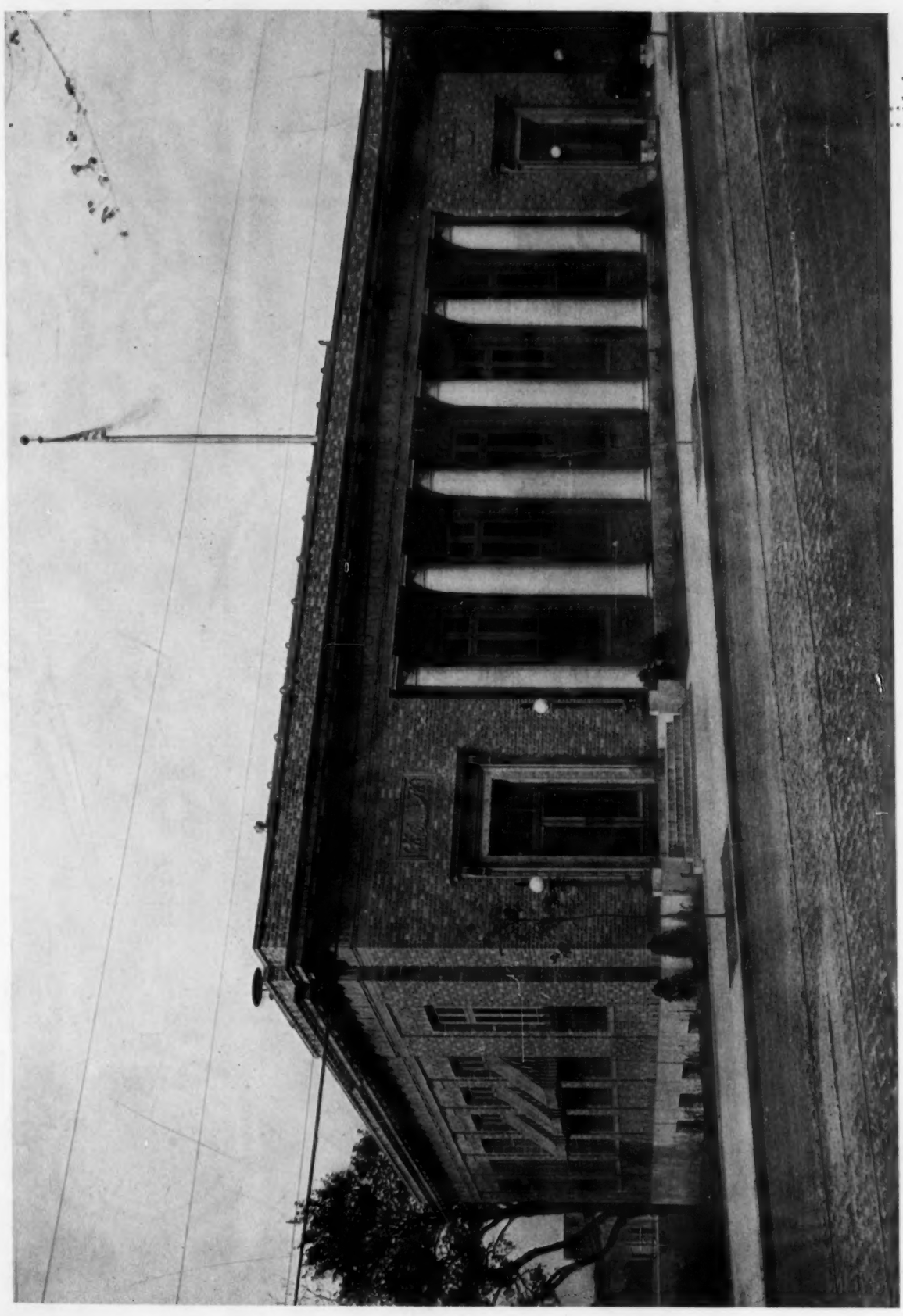
DETAIL OF GABLE AND ENTRANCE



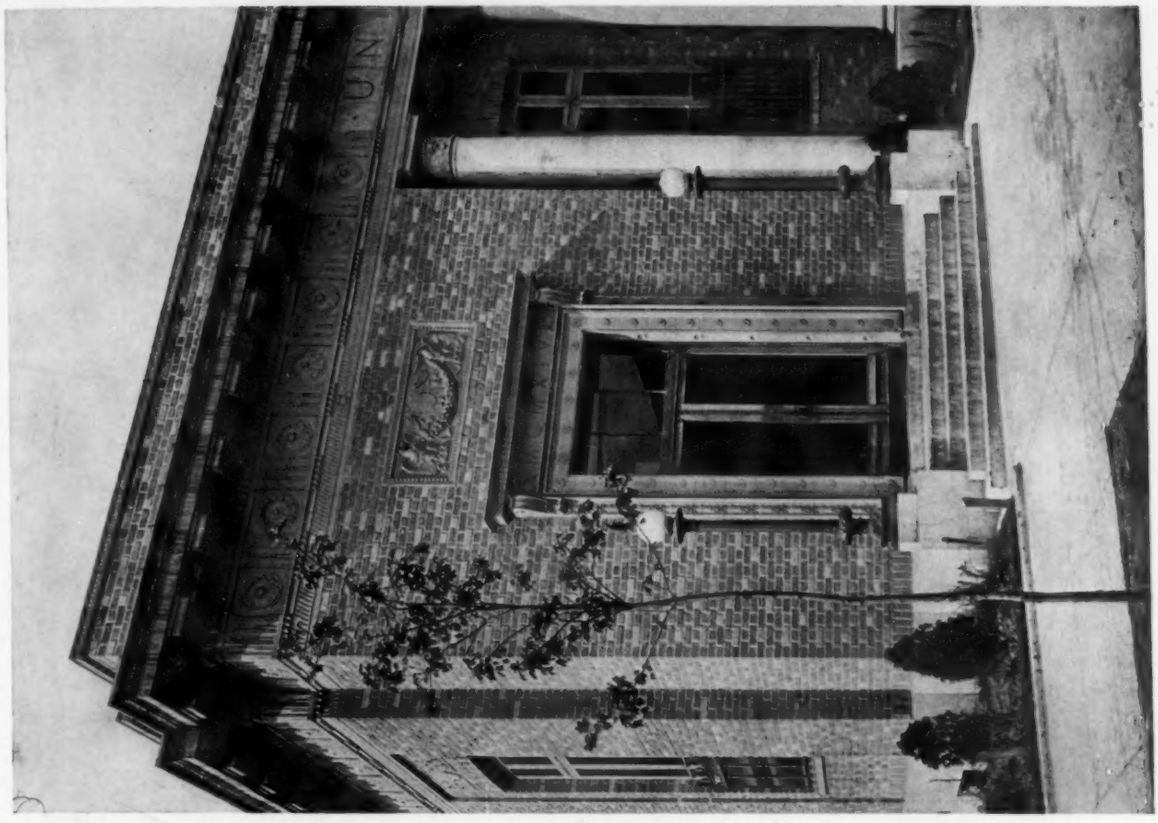
DETAIL OF MAIN ENTRANCE

ENGLEWOOD NEIGHBORHOOD HOUSE, ENGLEWOOD, N. J.

MANN & MacNEILLE, ARCHITECTS



UNITED STATES POST OFFICE, ORANGE, N. J.
YORK & SAWYER, ARCHITECTS

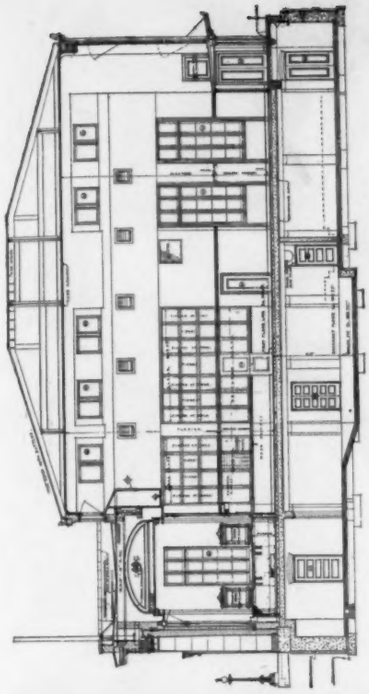


DETAIL OF LEFT ENTRANCE, MAIN FACADE

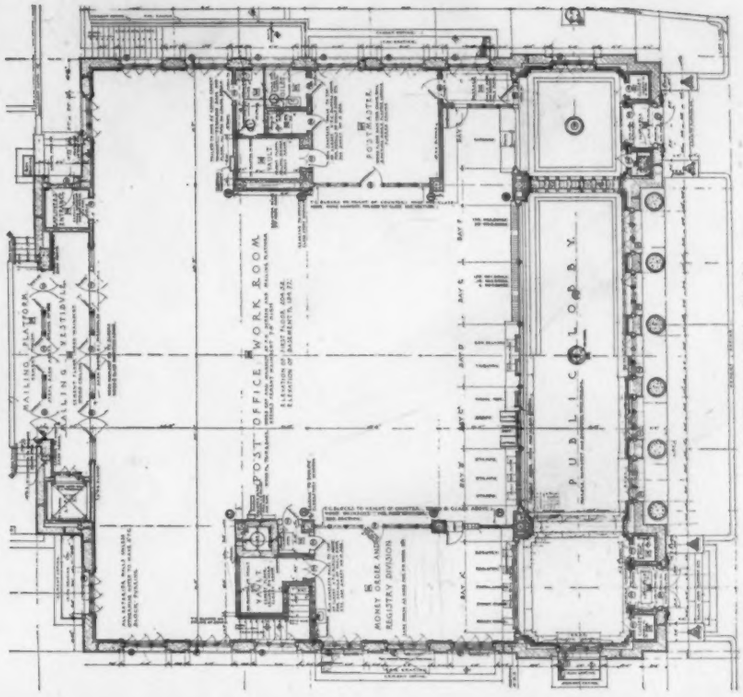
VIEW OF REAR SHOWING MAILING PLATFORM

UNITED STATES POST OFFICE, ORANGE, N. J.

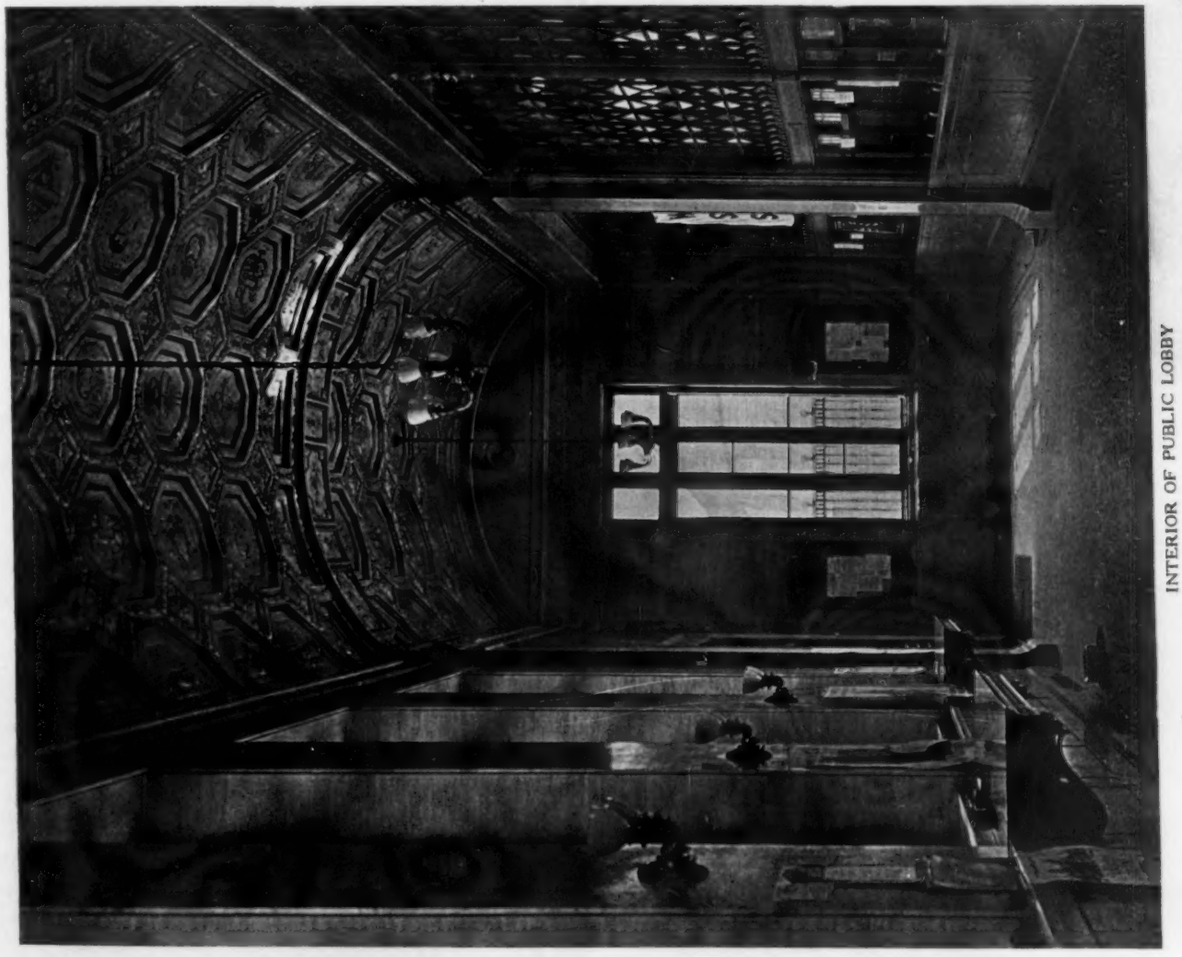
YORK & SAWYER, ARCHITECTS



LONGITUDINAL SECTION



FIRST FLOOR PLAN



INTERIOR OF PUBLIC LOBBY

UNITED STATES POST OFFICE, ORANGE, N. J.

YORK & SAWYER, ARCHITECTS

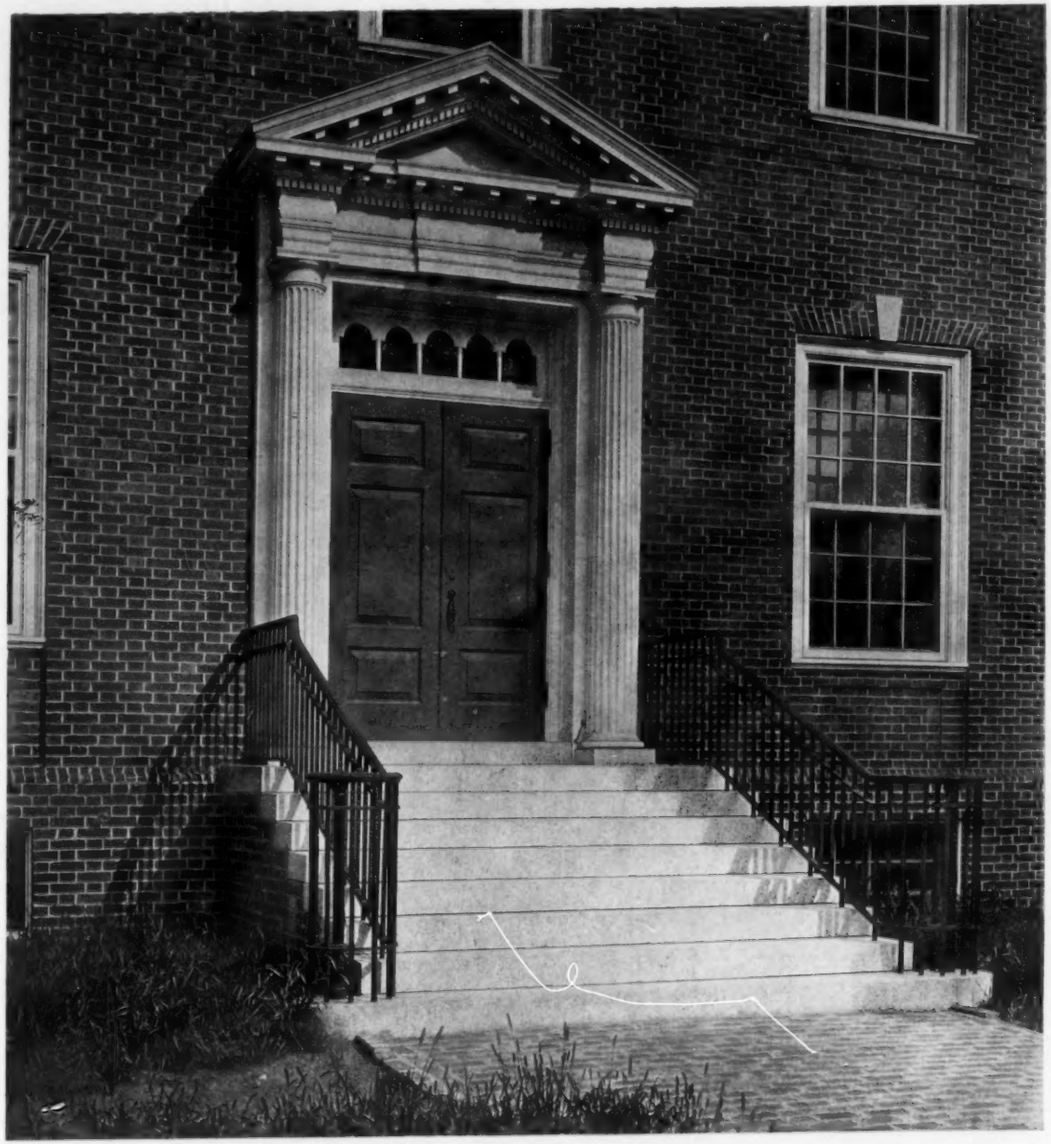
SECOND FLOOR PLAN

FIRST FLOOR PLAN

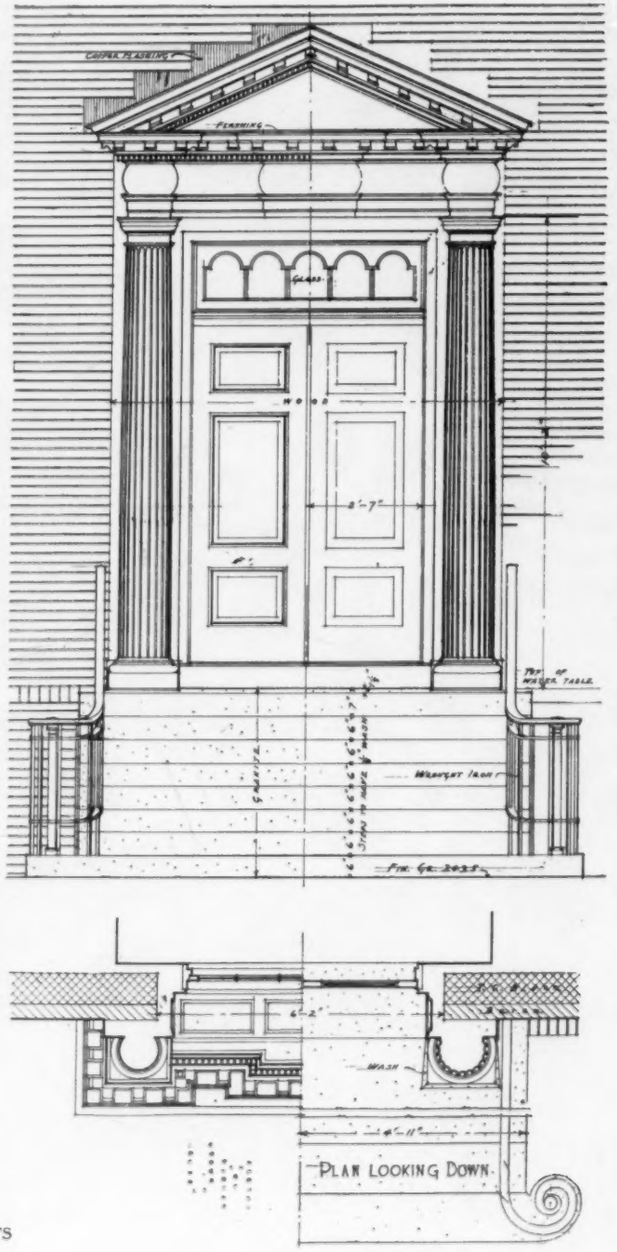
VIEW OF MAIN FACADE

TOWN OFFICE BUILDING, READING, MASS.

ADDEN & PARKER AND G. H. SIDEBOTTOM, ARCHITECTS



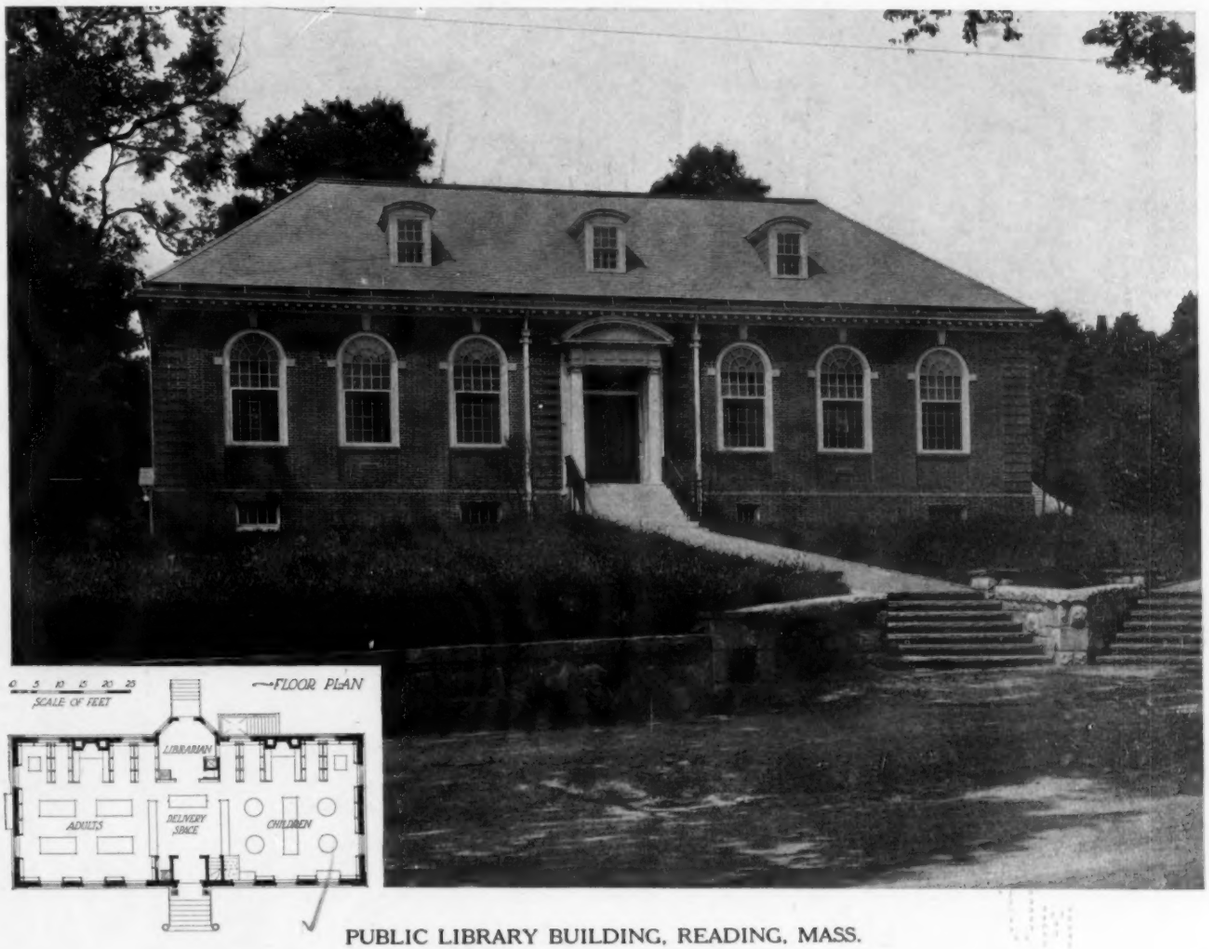
DETAIL OF SIDE ENTRANCE



TOWN OFFICE BUILDING, READING, MASS.

ADDEN & PARKER AND G. H. SIDEBOTTOM, ARCHITECTS

GENERAL VIEW OF LIBRARY AND TOWN OFFICE BUILDING



PUBLIC LIBRARY BUILDING, READING, MASS.

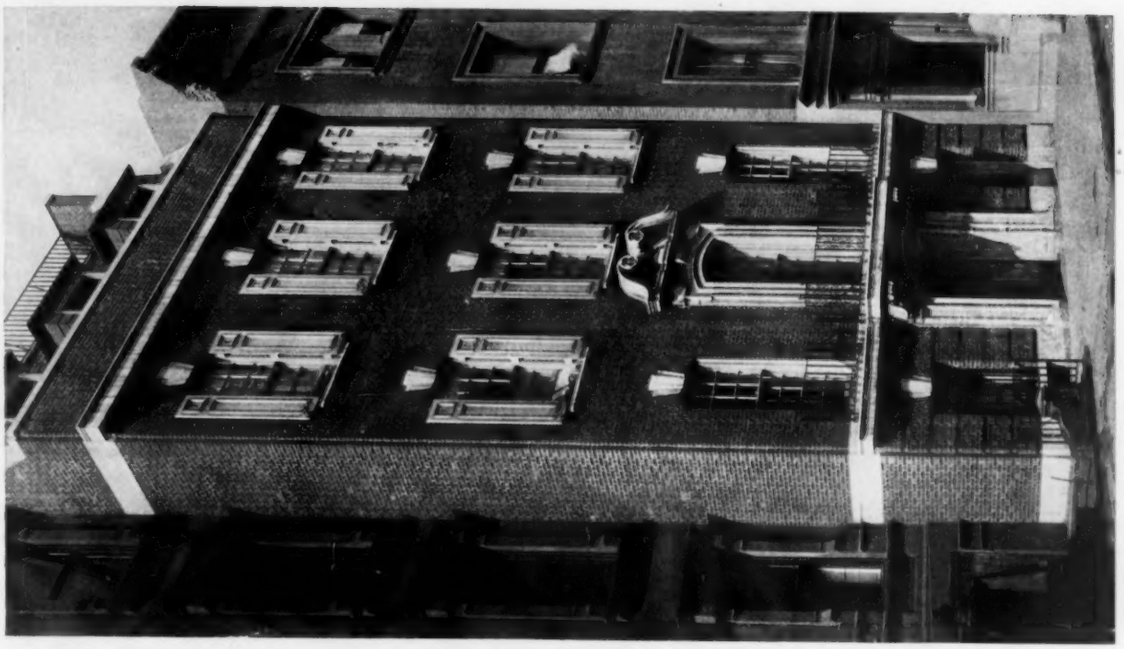
ADDEN & PARKER, ARCHITECTS

GENERAL VIEW OF EXTERIOR

GENERAL VIEW OF INTERIOR

PUBLIC LIBRARY BUILDING, SEYMOUR, CONN.

MURPHY & DANA, ARCHITECTS

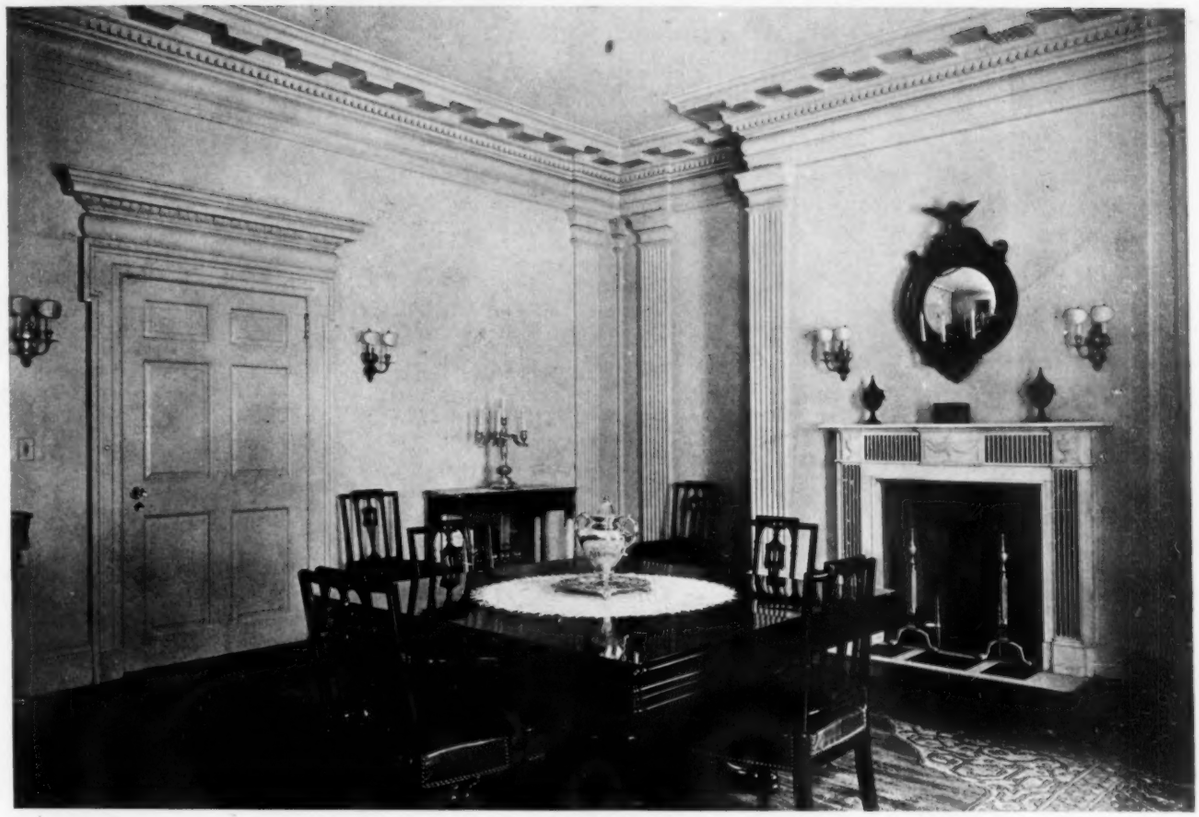


GENERAL VIEW OF FACADE

DETAIL OF LOWER STORIES

HOUSE IN EAST SEVENTY-FIFTH STREET, NEW YORK, N. Y.

F. BURRALL HOFFMAN, JR., ARCHITECT



DINING ROOM

GROUND FLOOR FIRST FLOOR SECOND FLOOR THIRD FLOOR FOURTH FLOOR

HOUSE IN EAST SEVENTY-FIFTH STREET, NEW YORK, N. Y.

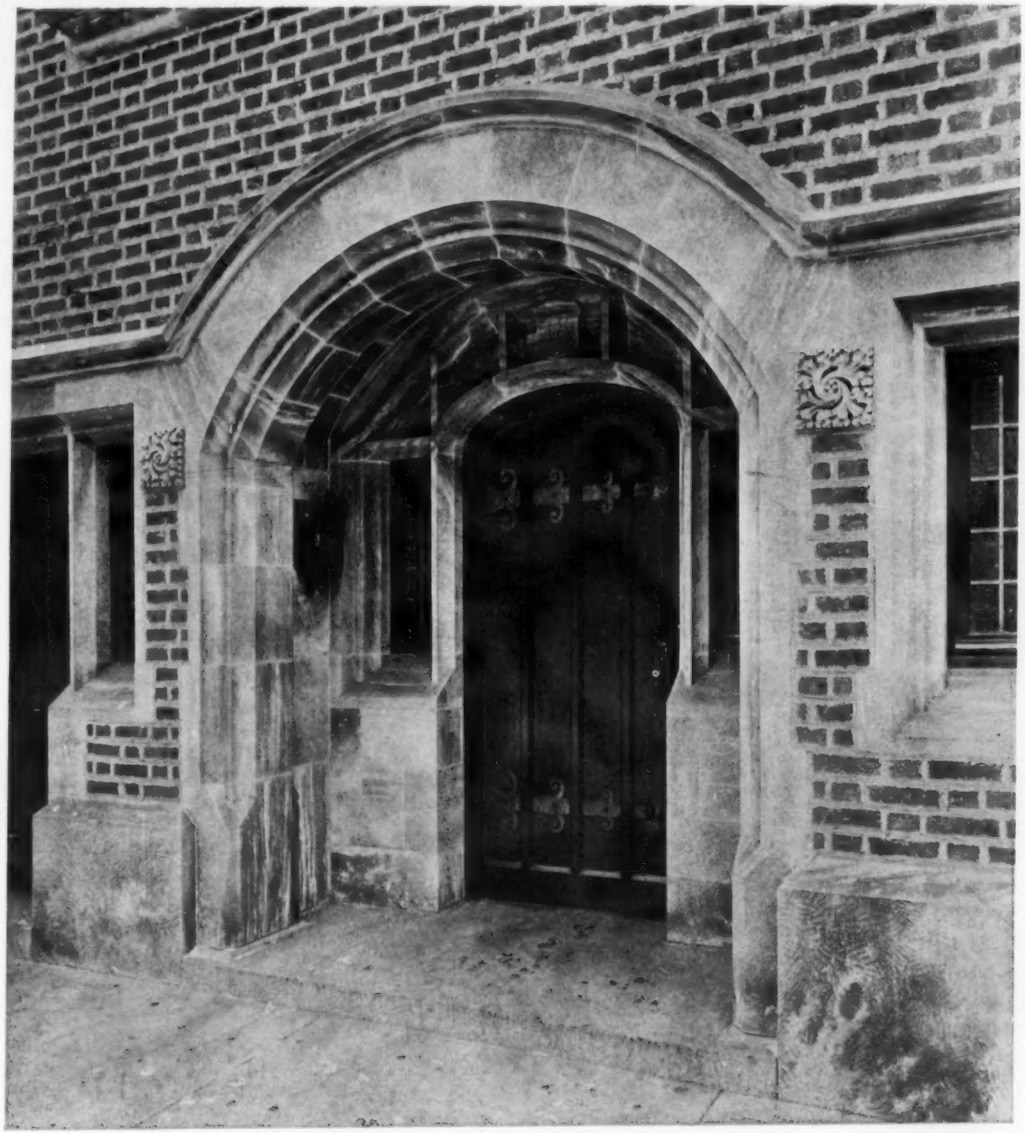
F. BURRALL HOFFMAN, JR., ARCHITECT

VIEW OF DRAWING ROOM

FIRST FLOOR HALL AND STAIRS

HOUSE IN EAST SEVENTY-FIFTH STREET, NEW YORK, N. Y.

F. BURRALL HOFFMAN, JR., ARCHITECT



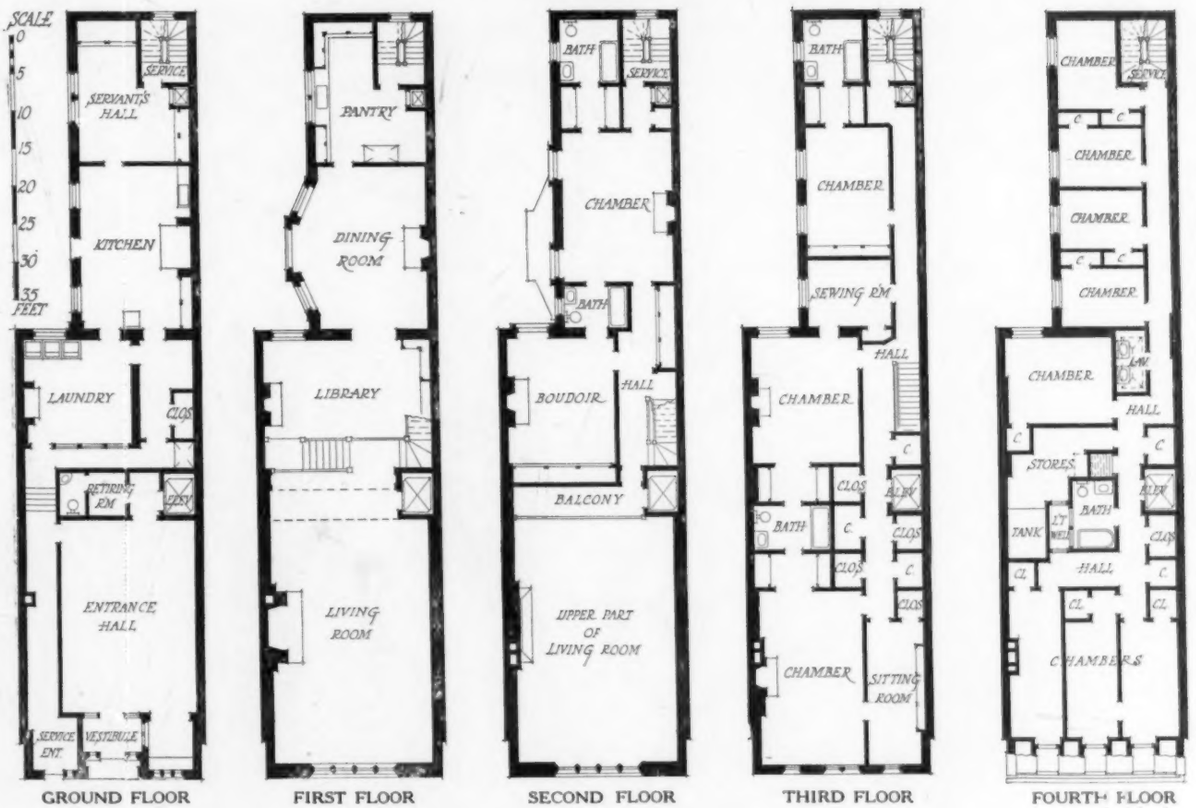
DETAIL OF ENTRANCE

GENERAL VIEW OF FACADE

HOUSE OF JAMES M. LEOPOLD, ESQ., EAST EIGHTIETH STREET, NEW YORK, N. Y.

HARRY ALLAN JACOBS, ARCHITECT

VIEW OF DINING-ROOM



GROUND FLOOR FIRST FLOOR SECOND FLOOR THIRD FLOOR FOURTH FLOOR

HOUSE OF JAMES M. LEOPOLD, ESQ., EAST EIGHTIETH STREET, NEW YORK, N. Y.

HARRY ALLAN JACOBS, ARCHITECT

LIVING-ROOM LOOKING TOWARD STREET

LIVING-ROOM LOOKING TOWARD BALCONY

HOUSE OF JAMES M. LEOPOLD, ESQ., EAST EIGHTIETH STREET, NEW YORK, N. Y.

HARRY ALLAN JACOBS, ARCHITECT

The Offices of Albert Kahn, Architect, Detroit, Michigan

By GEORGE C. BALDWIN

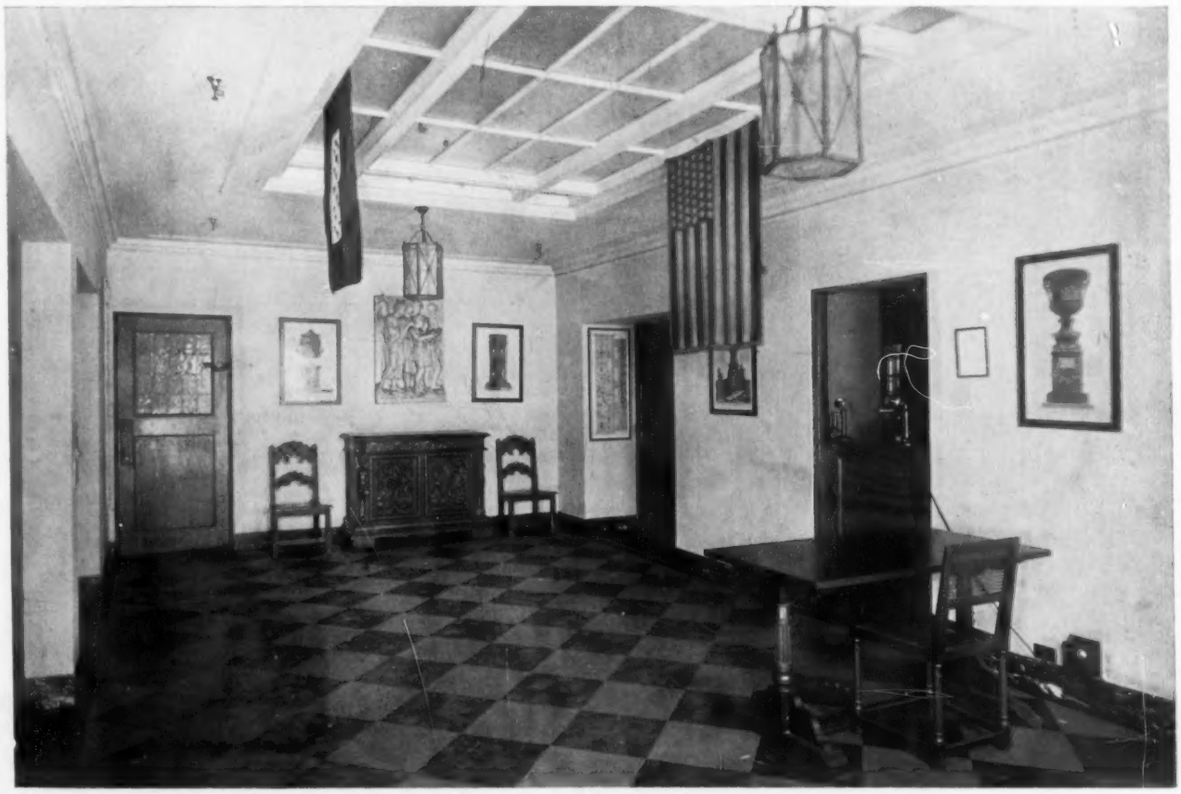
THE offices of Albert Kahn, Architect, occupy the entire upper floor of the Marquette Building, a structure originally used as a power building and recently remodeled into a loft building.

The offices were especially designed by Mr. Kahn about two years ago with the idea of affording his organization every advantage and up-to-date facility for taking care of his business interests.

The various departments occupy approximately 14,000 feet of floor space. In addition to the executive and administrative offices, lobby, corridors, vaults, toilets, sample room, girls' rest room, reception and conference rooms and library, there are two large drafting rooms, separate structural and mechanical engineering rooms, designing room, two specification rooms, one for the specification writers and a separate room for the typing and assembling of specifications, chief superintendent's office and field superintendent's room, estimating room for contractors, two filing rooms for contracts, correspondence, etc. The executive offices and conference rooms are arranged along one side of the building, the drafting rooms on the other. The mechanical engineering department is at one extreme corner, the structural engineering department at the opposite corner. The grouping of contractors' space for estimating, the accounting department, and the chief superintendent's office, as well as the office for field superintendents, works out particularly well. It brings these closely related departments into easy communication with one another.

Entrance to the lobby is direct from the public elevators and the position of the telephone room is such that the operator can see at once any one entering the office; there is one entrance from the outer lobby for the use of clients, another at the side for the use of contractors, and a third at the opposite side for the use of the employees who pass through the cloakroom to their respective rooms.

The placing and arrangement of the vault for filing of drawings is very satisfactory. It is conveniently near the drafting and specification rooms where reference to drawings is most often needed. The vault is large and high and so arranged that all drawings are readily accessible by means of a vertical suspension filing system and boxes for the folded, full-sized details. A copy of each specification is kept here in filing cabinets. An attendant is in charge, who



Entrance Lobby

passes out the drawings and keeps a record of their destination. He also sees to their being returned to their proper places.

The corridor running parallel to the large drafting room is arranged for the handling of blueprints, for packing and mailing; this work is thus kept out of the main drafting room.

Filing of correspondence is arranged by trades, and steel fireproof files are used for both current and transfer files. These files are concentrated in one room with a clerk in charge, thereby making it an orderly process to refer to any matter and avoiding the confusion that would be entailed if each department had individual files. The contractors' room is served by a plan room adjacent to the file room, where copies of current plans, specifications and bulletins are on file for use of contractors in taking off quantities and other data.

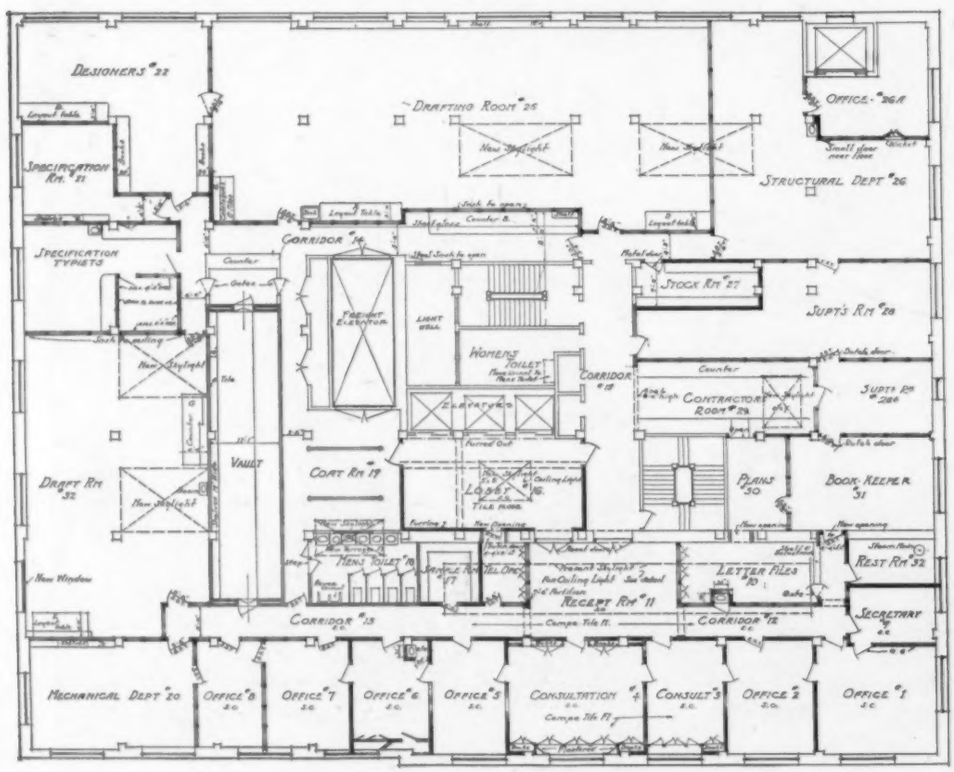
The offices of the executives are arranged in two groups at either side of the consultation room. The corridor which serves them is floored with composition tile to insure quietness. A very useful adjunct to the offices is a sample room off this corridor and conveniently near all the executive offices. Herein a fairly complete line of building materials is exhibited for office reference and the information of clients.

Interior of Typical Private Office

The several drafting rooms are divided by partitions glazed with clear glass. The private offices are divided by solid partitions.

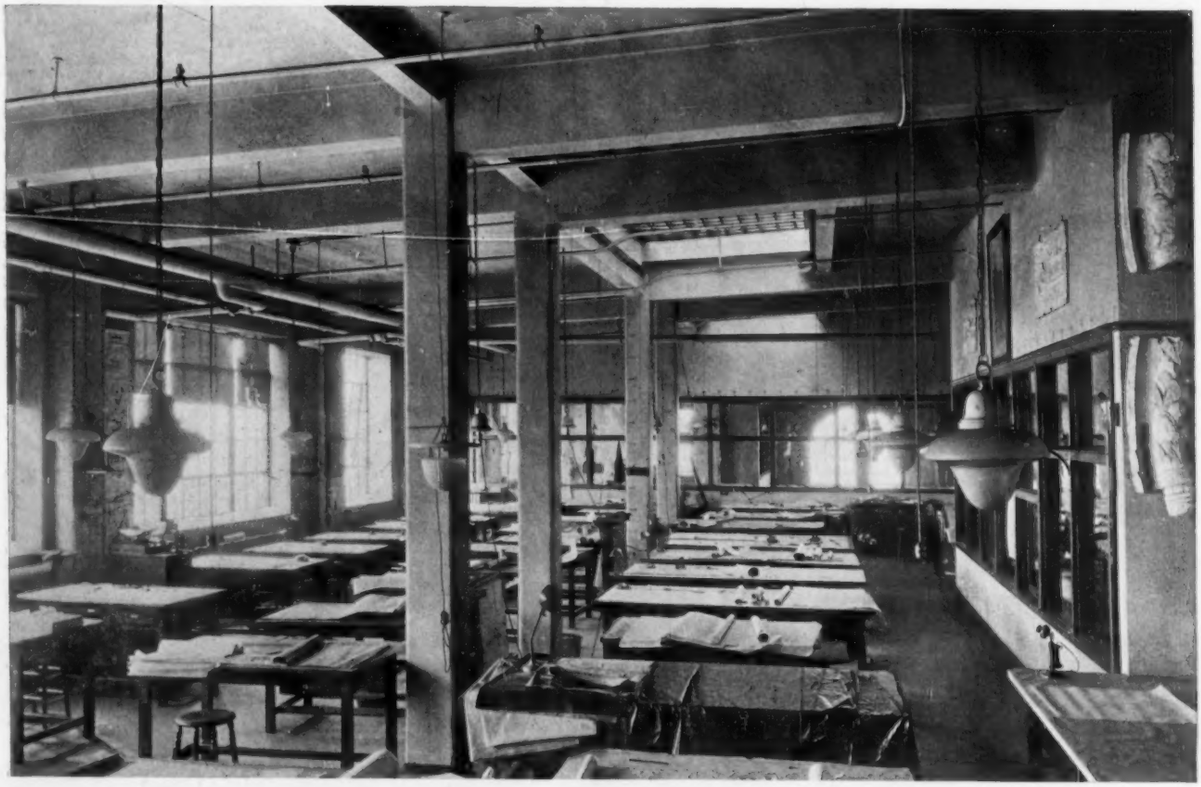
Each office is equipped with a city telephone, an inter-office telephone and a buzzer. The city telephones are connected with a private switchboard in the information room at the entrance lobby. The inter-office telephone system is independent of the city lines and operates through an automatic switch-board.

The outer lobby is treated with walls in imitation of Caen stone and hung with a number of Piranesi prints and plaster casts. The floor is of composition tile, finished at the walls with a black marble base. The inner lobby as well as the conference rooms are paneled to the ceiling in oak. These rooms have ornamental plaster ceilings. The larger conference room has a number of built-in bookcases, which hold the more important works of Mr. Kahn's library. The bound volumes of architectural magazines and other technical books are kept in the designers' room.



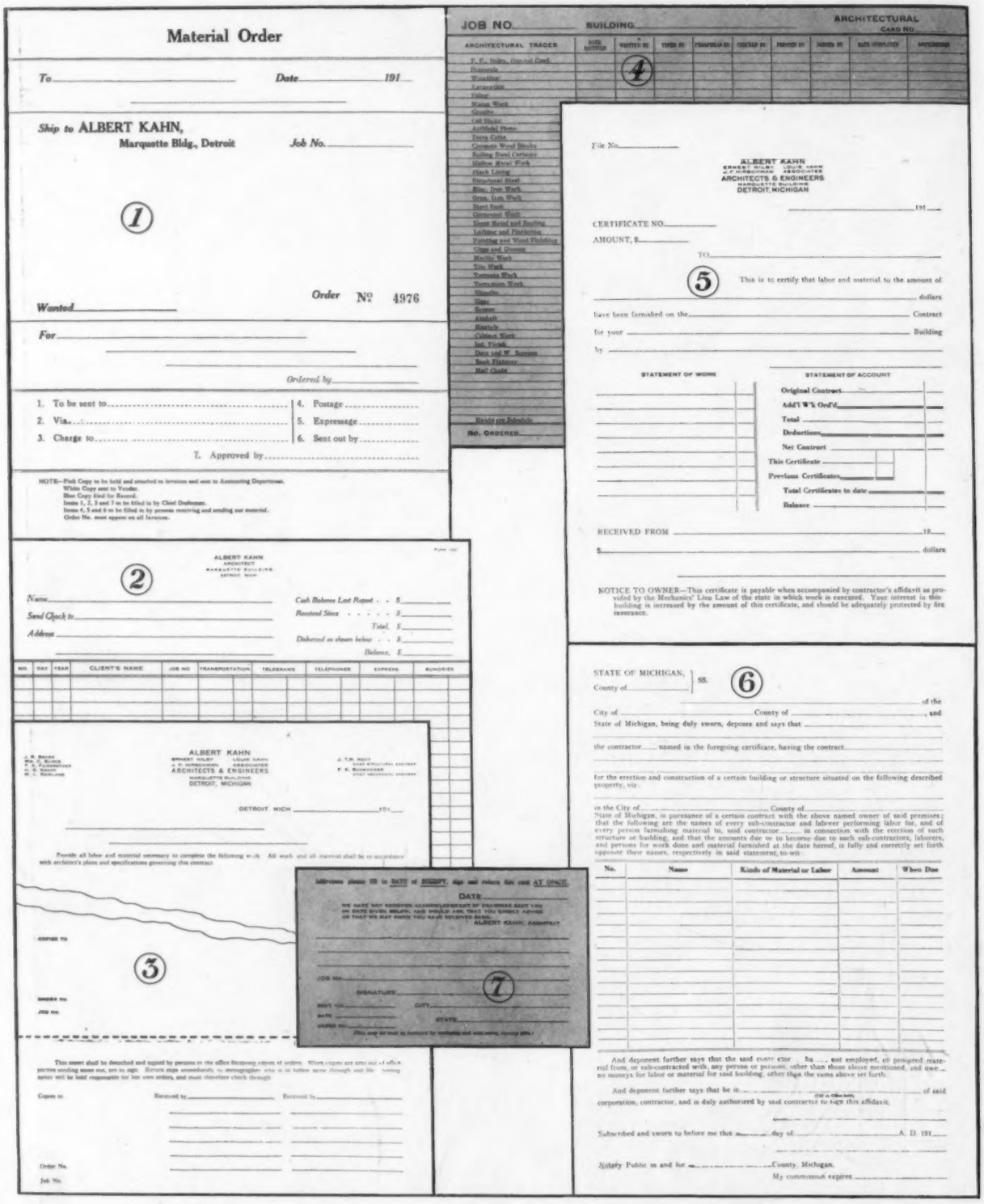
Floor Plan, Offices of Albert Kahn, Architect

VIEW OF RECEPTION ROOM



VIEW OF LARGE DRAFTING ROOM

OFFICES OF ALBERT KAHN, ARCHITECT, DETROIT, MICH.

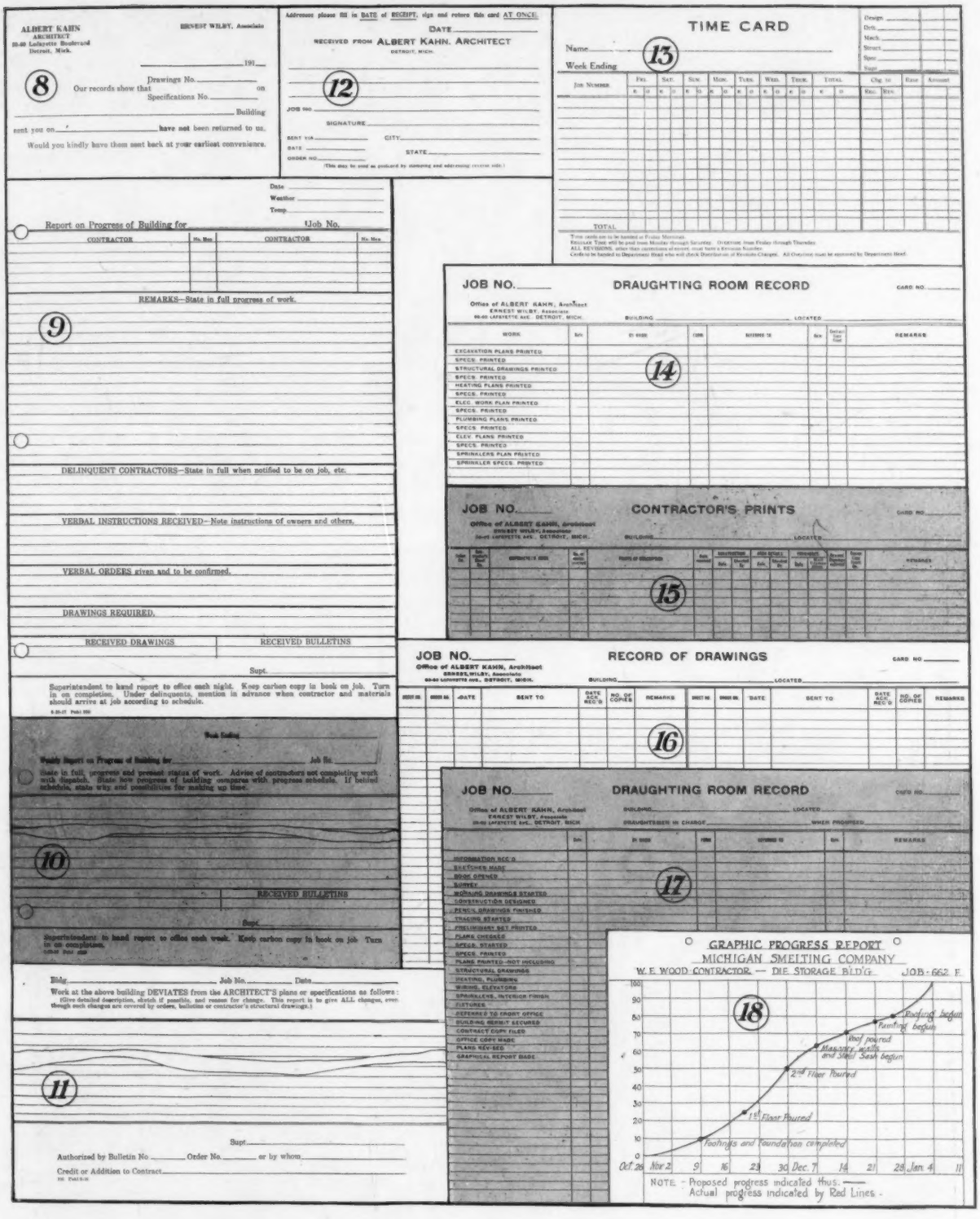

Material Order
To
Date 191
Ship to ALBERT KAHN,
Marquette Bldg., Detroit
Job No.
1
Order № 4976
Wanted
For
Ordered by
1. To be sent to
2. Via
3. Charge to
4. Postage
5. Expressage
6. Sent out by
7. Approved by
NOTE—Pink Copy to be held and attached to invoices and sent to Accounting Department.
White Copy sent to Vendor.
Blue Copy filed for Record.
Items 1, 2, 3 and 7 to be filled in by Chief Draftsman.
Items 4, 5 and 6 to be filled in by person receiving and sending out material.
Order No. must appear on all invoices.
JOB NO.
BUILDING
ARCHITECTURAL
CARD NO.
ARCHITECTURAL TRADES
DATE RECEIVED
WRITTEN BY
TYPED BY
PROPOSED BY
CHECKED BY
PRINTED BY
MAILED BY
DATE OPENED
REMARKS
4
Excavation
Concrete
Mason Work
Granite
Cut Stone
Artificial Stone
Terra Cotta
Carpenter Work
Rolling Steel Curtains
Hollow Metal Work
Stack Lining
Structural Steel
Misc. Iron Work
Orna. Iron Work
Sheet Iron
Dumbwaiter Work
Sheet Metal and Roofing
Lathing and Plastering
Painting and Wood Finishing
Glass and Glazing
Marble Work
Tile Work
Terrazzo Work
Terrazzo Work
Wiresilks
Slate
Rubber
Asphalt
Mantels
Cabinet Work
Int. Finish
Door and W. Screens
Bank Fixtures
Mail Chute
Hardware Schedule
No. Ordered
File No.
ALBERT KAHN
ARCHITECTS & ENGINEERS
DETROIT, MICHIGAN
191
CERTIFICATE NO.
AMOUNT, $
TO
5
This is to certify that labor and material to the amount of
dollars
have been furnished on the Contract
for your Building
by
STATEMENT OF WORK
STATEMENT OF ACCOUNT
Original Contract
Add'l W'k Ord'd
Total
Deductions
Net Contract
This Certificate
Previous Certificates
Total Certificates to date
Balance
RECEIVED FROM 19
$ dollars
NOTICE TO OWNER—This certificate is payable when accompanied by contractor's affidavit as provided by the Mechanics' Lien Law of the state in which work is executed. Your interest in this building is increased by the amount of this certificate, and should be adequately protected by fire insurance.
2
ALBERT KAHN
ARCHITECT
MARQUETTE BUILDING
DETROIT, MICH.
Name
Send Check to
Address
Cash Balance Last Report
Received Since
Total, $
Disbursed as shown below
Balance, $
NO. DAY YEAR CLIENT'S NAME JOB NO. TRANSPORTATION TELEGRAMS TELEPHONES EXPRESS SUNDRIES
ALBERT KAHN
ARCHITECTS & ENGINEERS
MARQUETTE BUILDING
DETROIT, MICHIGAN
DETROIT, MICH. 191
Provide all labor and material necessary to complete the following work. All work and all material shall be in accordance with architect's plans and specifications governing this contract.
COPIED TO
ORDER No.
JOB NO.
3
This order shall be detached and signed by persons in the office receiving copies of orders. When copies are sent out of office parties sending same out, are to sign. Returns slips immediately to stenographer who is to follow same through and file. Receiving parties will be held responsible for his own orders, and must therefore check through.
Copies to
Received by
Order No.
Job No.
Addressee please fill in DATE of RECEIPT, sign and return this card AT ONCE.
DATE
WE HAVE NOT RECEIVED ACKNOWLEDGMENT OF DRAWING SENT YOU ON DATE GIVEN BELOW, AND WOULD ASK THAT YOU KINDLY ADVISE US THAT WE MAY KNOW YOU HAVE RECEIVED SAME.
ALBERT KAHN, ARCHITECT
JOB NO.
SIGNATURE
7
CITY
STATE
STATE OF MICHIGAN, } SS.
County of
6
of the
City of County of and
State of Michigan, being duly sworn, deposes and says that
the contractor named in the foregoing certificate, having the contract
for the erection and construction of a certain building or structure situated on the following described property, viz:
in the City of County of
State of Michigan, in pursuance of a certain contract with the above named owner of said premises; that the following are the names of every sub-contractor and laborer performing labor for, and of every person furnishing material to, said contractor in connection with the erection of such structure or building, and that the amounts due or to become due to such sub-contractors, laborers, and persons for work done and material furnished at the date hereof, is fully and correctly set forth opposite their names, respectively in said statement, to-wit:
No. Name Kinds of Material or Labor Amount When Due
And deponent further says that the said contractor has not employed, or procured material from, or sub-contracted with, any person or persons, other than those above mentioned, and owes no moneys for labor or material for said building, other than the sums above set forth.
And deponent further says that he is of said corporation, contractor, and is duly authorized by said contractor to sign this affidavit.
Subscribed and sworn to before me this day of A. D. 191
Notary Public in and for County, Michigan.
My commission expires

1 Material Order
2 Expense Account
3 Work Order on Contractors

4 Schedule of Sub-Contracts (Architectural)
Reverse of this card has schedule of Mechanical Trades

5 Certificate for Payments
6 Reverse of Payment Certificate
7 "Follow-up" Receipt Card

REPRODUCTION OF FORMS IN USE IN THE OFFICES OF ALBERT KAHN, ARCHITECT



8 "Follow-up" Return Card
9 Superintendents' Daily Report
10 Supts.' Weekly Report (size 7½x10)
11 Superintendents' Report (size 8¼x10¾)
12 Receipt Card
13 Draftsman's Time Card
14 Office Print Record
15 Contractors' Print Record
16 Progress Record of Drawings
17 Office Record of the Commission
18 Graphic Progress Report

REPRODUCTION OF FORMS IN USE IN THE OFFICES OF ALBERT KAHN, ARCHITECT

In Mr. Kahn's practice, particular attention is paid to the business administration of the work. To this end a practical, up-to-date system and a staff of competent accountants are employed.

All departments have graphical progress reports for their work. At the beginning of any work the estimated progress is indicated by a curve in black ink on co-ordinate paper, and the actual progress recorded from day to day in red ink. Any marked divergence in these curves indicates serious delay, and daily inspection of the records enables prompt action to be taken to remove it. The superintendent reports his progress in this way and also by means of daily and weekly reports. Reproduction of the superintendent's progress schedule is shown herewith, others for drafting and specification rooms are similar. Thus a general and detailed supervision of all work is possible from the executive offices.

Examples of the various reports kept for the different items of work are illustrated herewith, also samples of reports and certificates. The general scheme of office procedure is, briefly, inter-office communication for preliminary notification or questions and bulletins for formal notification. The forms for these latter are not reproduced. They are on lightweight paper of standard letter size, green being used for inter-office communication and buff for bulletins. Deviations from plans and specifications as based on contract are formally ordered on official order blanks. These, together with contracts, give the accounting department all necessary information.

It could safely be assumed from the magnitude of work of consistently good character that this office produces, that its working plant would exhibit marks of orderly business arrangement. The brief description noted here, together with the reproductions of office forms in use, prove this thought not to be unfounded. Mr. Kahn's office is particularly successful in combining two ideals that must characterize any successful office. The dignity and art aspect of the architectural profession are fully represented, and to no less a degree is the business structure upon which harmonious professional relations depend recognized.

Interior View of Consultation Room
Offices of Albert Kahn, Architect, Detroit, Michigan

Housing Development for the United States Naval Ordnance Plant Near Charleston, West Virginia

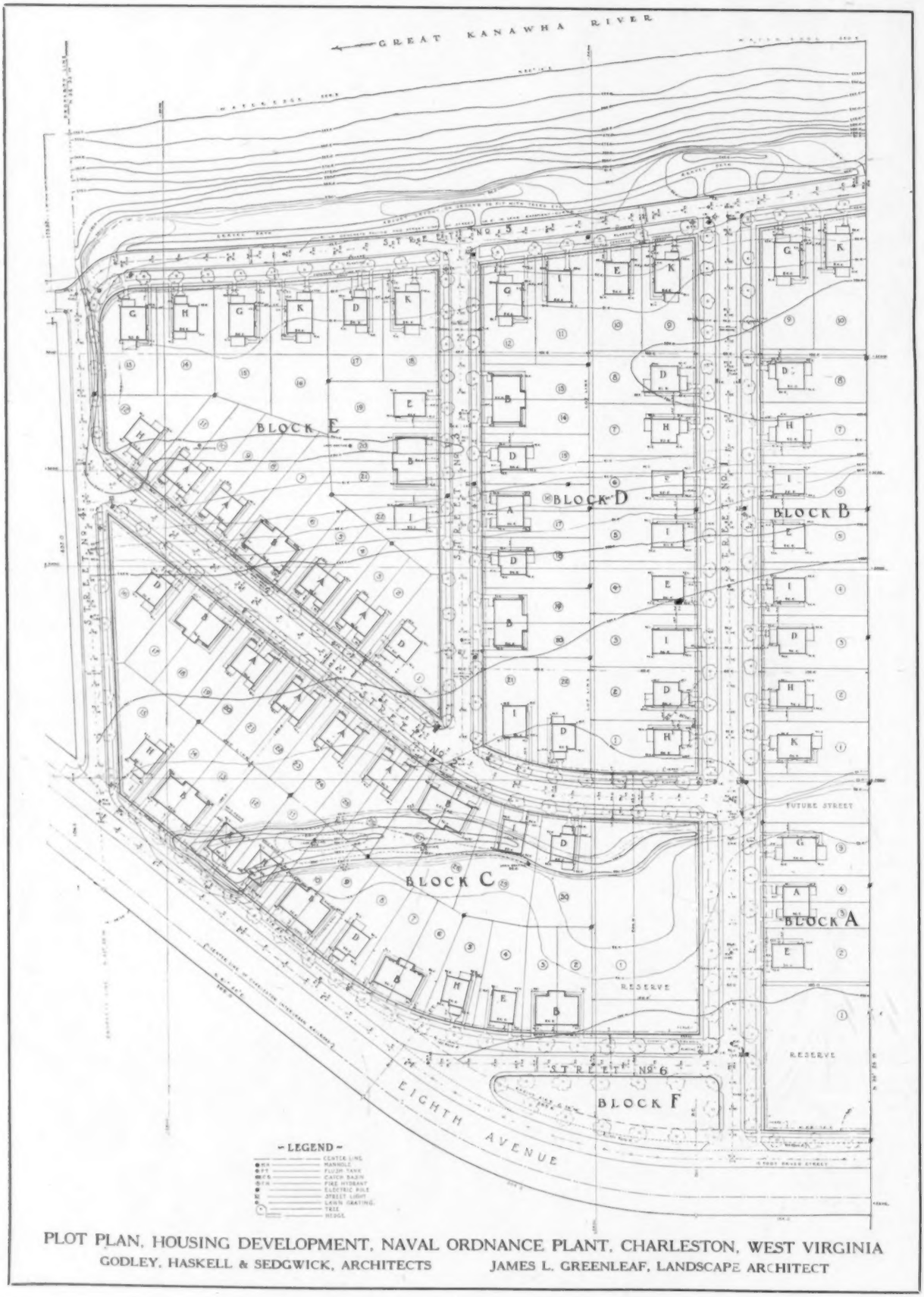
GODLEY, HASKELL & SEDGWICK, ARCHITECTS

By CHARLES C. MAY

NOT long hence it will become possible for the earliest of the housing developments sponsored by the United States Government, to be set up for comparison alongside the best of those previously built under private initiative. When that time comes, it is inevitable that not every comment will be favorable; some parallels will be drawn with results that seem adverse to the government projects. It is not impossible, of course, that some such comparisons may be grounded in fact; on the other hand, it is far more probable that an adverse judgment may be rendered superficially, through losing sight of the fundamentals in the situation.

Under private enterprise, there have been numbers of developments undertaken where the financial balance sheet could not be considered economically sound. In some cases the companies have frankly classed their provision of houses, clubs, hospitals, libraries and other community features, as a philanthropy — as bread cast upon the waters near at hand, in hope that favoring winds might keep it from being scattered. Others have accepted an absence of return or a deficit on their housing investment, as a loss only in appearance, maintaining that their returns, while difficult to present in figures, were just as certainly to be found in other columns of the balance sheet — in a bettered efficiency of the individual workman, in a bettered morale of the workshop — in a host of other details all contributing to the single all-inclusive item, a diminishing charge for labor turnover. In other cases, in order to fight rising costs of construction and to minimize first investments, owners have consented to construction of doubtful solidity, gambling on the future maintenance costs as against initial outlay.

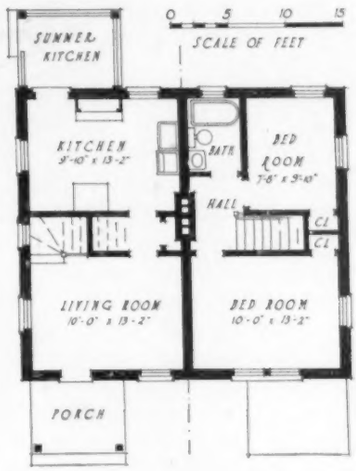
It is the aim of the United States Housing Corporation, in so far as such a thing is possible, to avoid both these conditions — and it thereby multiplies in manifold ways the difficulties of the problems it has taken upon itself. Leaving out of account for the moment the whole class of developments where construction is purely temporary, the Housing Corporation proposes to regard all its housing commitments from the point of view of long-term investments. The increased costs resulting from the adoption of this standard of building for permanency form a handicap which the government has at the outset volunteered to carry. The next element ot difficulty arises from the fact that the Housing Corporation is operating on a tremendous scale, in a market from which private interests had long since been driven by war prices and war restrictions. It needs no elaboration to prove that, notwithstanding priorities, differentials and every sort of departmental aid, the difficulties incident to every building operation have multiplied unbelievably during our eighteen months of war. Considering these elements one would say that the authorities must necessarily expect and accept large losses on every one of their building programs. It is doubtless true that at the return to normal times, a certain proportion of the abnormal costs will have to be written off as war expense, but the policy of the Housing Corporation, toward which the organization is bending every effort, is to keep those items down to the lowest



PLOT PLAN, HOUSING DEVELOPMENT, NAVAL ORDNANCE PLANT, CHARLESTON, WEST VIRGINIA

GODLEY, HASKELL & SEDGWICK, ARCHITECTS JAMES L. GREENLEAF, LANDSCAPE ARCHITECT

that are humanly possible. To do this and still to maintain the high standards of accommodation and construction to which it is pledged, it has been necessary to cut off every extraneous feature, to omit every needless luxury, to reduce to their lowest terms every essential—everywhere to simplify, to standardize, to compact. A dozen feet of piping saved in a single house is an item, one would say, too minute to deserve notice in a time of world crisis. Yet, multiply that saving by five hundred or a thousand for the whole development, then apply the saving principle to a dozen or more similar projects, and you have a total which means something even in the sort of computations we are learning to juggle nowadays.

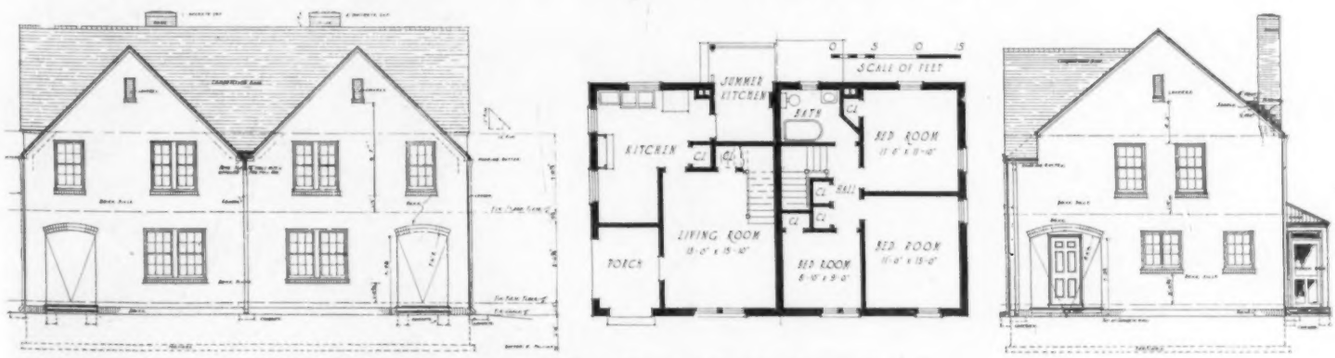


Elevations and Floor Plans of Double House Type A

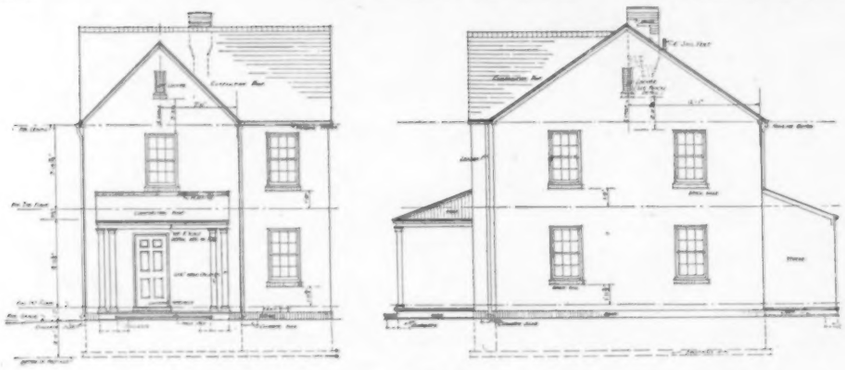
Such are a few of the considerations which enter into the wholesale building of towns by governmental authority, and which explain some of the disappointment that is likely to be felt by that portion of the public who are wont to feel that a town built by the United States of America must perforce contain everything that is to be found anywhere else, together with quite a number of little things besides. The same considerations show us why the architect must study his problem in industrial housing primarily from the economic and sociological standpoint, with the architectural and æsthetic relegated to a position in the middle distance. If a project cannot stand before the test of economics, it has failed, though all the beauty in the world be gathered into the ground plan and its structure.

These points should be kept in mind in discussing any of these new activities of the United States Housing Corporation and they apply specifically to the one illustrated in these pages. This is a housing development in connection with the United States Naval Ordnance Plant near Charleston, W. Va. For this project the Housing Corporation selected Messrs. Godley, Haskell & Sedgwick of New York as architects, acting with Mr. James L. Greenleaf, town planner and engineer, as the other member of the committee of designers. It may perhaps still need to be said that such a committee (usually made up of three) is appointed to act in the case of every project under the United States Housing Corporation.

The project is not one of the largest of the governmental undertakings — the present program involves an area of only about twelve acres; it is not, perhaps, the most complex — it must provide for only the higher grade of employee; nor has it, for the present, the necessity for providing for the community features of a self-contained village. It has, nevertheless, received the most careful study and adjustment, that it might, on the one hand, conform to local preferences and habits of living, and, on the other, show the local habit the better way of a combined utility and architectural quality and distinction.



Elevations and Floor Plans of Double House, Type B



Elevations and Floor Plans of Single House, Type D

The site selected for the new group is about four miles from the very progressive town of Charleston, W. Va., and only one-half mile from the smaller village of South Charleston. The tract is approximately level, lying along the top of the high south bank of the Kanahwa River at the base of the hills which border the stream on both sides. So far as topography is concerned, the land is well adapted to economical development, the only natural feature of determining importance being the gully which cuts at an irregular diagonal through the tract. This gully is to be partially filled and made available for use, but the natural beauty of its wooded upper bank is to be carefully preserved and developed.

The town plan has been arranged to fit the somewhat irregular shape of the area, the intermediate street eased into correspondence with the curve of Eighth Avenue, the main thoroughfare toward Charleston, and the bounding line of the development on the side farthest from the river. These curved roads give sufficient relief from the gridiron, and will help to produce the village street aspect which should obtain in a group of this sort. The lots are well shaped, the majority of them true rectangles, and therefore easy to treat and simple to describe in a deed of sale. Accepted practice has been followed in the planning of street widths and sections; that is, the main thoroughfare is made sixty feet wide with twenty-four foot roadway, the minor, residential street not more than forty feet wide with roadway twenty feet wide. In both cases, provision is made for street planting and parking at the roadside.

The original plan for this development contemplated the community features which go to make up a self-contained village. When it was found necessary, because of the limited appropriation, to constrict the program, these public and semi-public buildings were the ones which had to go. Provision is made at two points for the future extension of streets, and within the present development, reservations have been made which will afford good sites for several of the community buildings when circumstances make them possible. Park provision has been made on the south side of Eighth Avenue, where there will also be general playground space, and an athletic field.

When the matter of public utilities was studied, it was found necessary to provide everything for this development complete and new; this includes, besides the usual water supply, electric lights and sanitary sewers, piping for natural gas and storm water drainage. This last is forced by the character of the soil — a rather heavy clay with waterholding pockets. This same consideration, combined with the local custom, decided against the use of cellars, of which there are only two in the whole group. The ravine mentioned above made it possible to drain these two sites, but in

Front Elevation and Floor Plan of Single House Type G, with provisions for boarders

every other case, a water pressure would have resulted at certain periods of the year, and the cost of waterproofing and reinforcement against it were regarded as prohibitive. The presence of natural gas, which is used for cooking, should prove a boon to housekeepers. To the easterner the idea of a month's bill for the gas range, amounting to sixteen cents, would be delightful if it brought no distressing visions by way of contrast.

As already noted, none but building for permanence enters into the development. Fire risk is at the same time reduced to that within the individual house. Construction of floors, partitions and roofs is of wood, but exterior walls are of stucco on terra-cotta block, roofs are finished with gray-green slate-surfaced shingles. Even in the semi-detached type of house, with its party wall of masonry carried up right to the roof, the danger of general conflagration is so reduced as to be virtually non-existent.

We have noted that the development is intended to house the higher grades of the mechanical and clerical forces; the common labor, it was found, could be drawn from the supplies of the surrounding areas. The development is, likewise, for the married workmen rather than the single man, though some of the houses do make provision for him in their plan. This is in accord with the universal experience that the married worker is more reliable, more productive, more valuable to his concern than the man without the stabilizing influence of a home. This group is, therefore, confined to housekeeping units in single family dwellings of detached and semi-detached types.

The houses themselves are of five different types, ranging from four rooms and bath to eight rooms and bath. The smallest of these, type "A," semi-detached, gives a very compact plan of two rooms on the living floor, either one of which, or both perhaps, being used as dining-room, according to the occasion. The second floor has one double bedroom, as large as the living-room below, with a single bedroom and a bath at the rear. This is all contained in a main house size of 14 feet 3 inches x 25 feet 6 inches, exclusive of porches. It is interesting to note that in every type there appears a summer kitchen — this in conformity to local custom, and this, in turn, derived from requirements of climate. Living porches are of course provided in addition, and these, in the semi-detached types are kept well apart instead of adjoining, out of respect for the desire of each family to live somewhat unto itself even though in a semi-detached house. The larger of this class (the semi-detached) occupying 21 feet 10 inches x 27 feet 0 inches, has a third bedroom on the second floor, and a dining alcove off the kitchen instead of a separate dining-room. In this case the living-porch is inset; in the type "A" it is a lean-to against the main building.

Of the detached houses, the most striking in plan is the eight-room, type "G," which is designed to allow the presence of boarders without loss of privacy to the household. It shows two bedrooms and a toilet on the first floor, occupying one whole side of the building, with separate entrance, and connected only through a lobby, with the main part of the house. It is most interesting in arrangement; as to its functioning, question might be raised as to the amount of living and dining space provided in a house having six good-sized bedrooms.

In most of the houses, heat is to be provided by stoves; in the two having cellars, however, a hot-water heating plant will be installed. Other accommodations, such as a complete plumbing installation, electric light, hardly need to be mentioned; in these days they go without saying. So far as design is concerned, Messrs. Godley, Haskell & Sedgwick have produced a series of houses which will possess individual and collective interest, through unity in material and color, which will satisfy requirements of utility, and which express those requirements in simple, straightforward and economical terms.

Elevations and Floor Plans of Single House, Type E

A COMMUNICATION

Editors The Architectural Forum:

THE writer has read with interest the articles by Mr. Beach on certain "problems" confronting the members of our profession, published in recent issues of THE FORUM. I quite agree with him that we are not as a unit equipping ourselves to cope with these as we should. But it seems to me that Mr. Beach has not placed enough stress on the greater problem with which we have all been wrestling through many years — our relations with the building mechanic. He says it must be dealt with, but we *are* dealing with it every day.

Personally, I believe in unions, associations and any other combinations of individuals organized for the purpose of improving certain conditions, reducing operating expenses or combating any common evil. I am satisfied that the old-fashioned employer who beat down wages and, at the same time, used the methods of the slave-driver with his employees needed the lessons the unions have taught him. I can conceive that some employers of that ilk are still in existence, merely held in check by the union whip.

Also, I believe that there are trades unions (like those of railway conductors and engineers) which teach that it is right for a man to try to excel in his chosen calling, that personal ambition is commendable and that faithfulness to one's employer is not a bad thing.

But my quarrel is with the teachings of those leaders who will not allow a man to do his best on a job, who make life unlivable for apprentices and who are always seeking the most trivial excuse for "pulling a job." Such a one drills into his followers the gospel that the interest of the union is the greatest thing in life, that no allegiance is due an employer and that it is scab doctrine to believe otherwise.

May I be permitted to cite an instance or two?

I was having a garage built under a cost-plus agreement by a contractor in a small city. Time and economy were the two major essentials of the operation, but no appreciation of either was to be had from the union men on the work. They simply took their own time and their own methods and some of the latter were most peculiar. At times, such as when joists were being laid, we needed but one mason on the job. At such a time, I noticed two puttering about and asked the contractor why one would not suffice.

"Union rules," he explained.

"But why pay one of the men foreman's wages when you are here to act as your own foreman? Aren't you a brick mason?"

"Yes, but being a general contractor, I can't be a union foreman. And when two or more men are employed on a job, one must be a foreman according to their ruling."

"But why two in this case?"

"There must always be two when there is work to be done, except in the case of repairs, piers and chimneys, otherwise a mason might have to use a helper for work that only a mason is supposed to do."

"Do you call that fair to the man who foots the bills?"

"You don't suppose union rules are made for his benefit or for you and me, do you? You ought to know who they're made for."

On another occasion on the same work, I noticed two masons tending a third who was standing on a plank on horses above the scaffold in order to finish a wall story high without building another full height of scaffold, quite a customary procedure, as you know. One mason was handing up brick, another mortar. I demurred.

"Here," I said to several helpers who were standing round, "Get up on that scaffold and tend those men, so all three can lay brick and get that wall ready for the carpenters."

"Nothing doing, boss," said one. "They don't allow helpers up on the scaffold, just masons."

These are fair specimens of what one continually encounters. And, with the growing scarcity of building trades labor and its consequent increasing independence, conditions are steadily getting worse. Relief must be had, but how?

I am not prepared to agree with your writer that we can only hope for betterment through a development of the trade schools, fathered by an influential committee of the A. I. A. I rather think that the way out is through the unions themselves. They are still human, with no more viciousness in their make-up, no more selfishness than the rest of us.

If their worst side has been most prominent, it is only because their battles for industrial freedom have made it so. Belligerent trades unionism has produced the blackmailer, the bribe-taker and other despicable characters, some more forceful and vociferous than their industrious fellows, whose only mistake has been in allowing such men to be leaders.

But why should we always work through the contractors; why not deal with the men direct?

We are told by a union carpenter writing in *Pearson's Magazine* for April, 1917, that "Not only have the building trades organized the employees, they have also organized the employers and trained them to work in something closer to harmony than a continuous riot with the employees. In most cities agreements are now mutually exclusive. The employers' association agrees to employ only union men and the unionists work only for organized contractors."

As one such contractor said, "Why should we worry? We now have stabilized wages on which to base our estimates and also the comforting assurance that no

outsider can come in and upset the applecart."

Ideal, perhaps, from his viewpoint, but how about the owner who foots the bills? And how about the architect who is ethically obligated to get his client's money's worth? The time may come (perhaps it has already arrived) when the owner will quit building until he can get a semblance of his money's worth.

Now, if our organization, being highly ethical and altruistic in character, will set itself to seek out the best that is in trades unionism and will demonstrate to those leaders, who are broad-minded enough to see, that the next move for their betterment is not again striking for higher wages, there being not enough building planned to pay present wages, but, by encouraging building labor to more economic effort and the ultimate good of the owner, stimulate that owner to attempt investments that are now indefinitely postponed, Why cannot your journal, having drawn attention to the matter, encourage a symposium on the subject. I would like to hear from others. — A. B. C.

PLATE DESCRIPTION

Englewood Neighborhood House. Plates 65-67. This neighborhood house, the gift of Mr. William Morris Imbrie, is located in a congested portion of the city of Englewood, N. J., and intended to serve the needs of a large colony of Italians. Religious services are held in Italian and English every Sunday, but the building serves in a wider sense as a community center. A basketball court and shuttle board are in the basement, where there are also shower baths and locker rooms for boys and girls, and a kitchen. The main floor contains a large assembly room with alcoves, formed by movable partitions, grouped around it. One of the large rooms in front is used for a men's reading and smoking room, and the other as a meeting room for the women of the neighborhood. The second floor which extends over only the front portion of the building, contains an apartment occupied by two women who are in charge of welfare work. The building is built of rough, red brick laid in natural color cement mortar and has a red tile roof. It is trimmed with limestone, and inlaid with various colored pieces of marble and tile. The graffito work over the entrance was contributed by an Italian artist.

United States Post Office, Orange, N. J. Plates 68–70. This building was erected from a design that received first award in a competition conducted by the United States Treasury. The exterior is carried out in buff-colored brick with a similarly toned terra cotta for the detail, and yellow granite columns on the principal façade. The feature of most interest in the building is the logical simplicity of its plan. The public lobby extends across the front of the building with an entrance at each end. The working space occupies the center of the building and is carried up high enough to be lighted and ventilated by clerestory windows on all sides, avoiding the usual skylight which is intolerable in hot weather.

Town Office Building and Public Library, Reading, Mass. Plates 71–73. This town building is somewhat different in general layout from the usual type, inasmuch as no attempt was made to incorporate in it a town hall. The problem primarily consisted of grouping under one roof offices of the various town officials and departments. The hearing room on the second floor is large enough to accommodate all ordinary municipal gatherings, and also serves as headquarters for the town finance committee. The exterior walls are of waterstruck brick with wood trimmings. The interior finish is oak. The building was completed this year and cost about $40,000.

The preliminary plan of the library was evolved by Dr. Horace S. Wadlin, former librarian of the Boston Public Library. It consists of one undivided room, thus making possible administration by one attendant; a certain amount of privacy for the librarian and separation of the adults' and children's departments being accomplished by the arrangement of counters and bookcases, the latter being carried about 8 feet above the floor. In the basement is a small hall or lecture room seating about 200, together with toilets and heating apparatus. The finish of the main story is white and mahogany, the walls being tinted a warm gray. The building cost about $19,000 including the furniture.

House in East 75th Street, New York. Plates 75–77. This house presents a very dignified and simple façade in the Georgian style, carried out in red brick with marble string courses, entrance and keystones. The interior is characterized by a sturdy Georgian treatment throughout in complete accord with the exterior. The house was designed by F. Burrall Hoffman, Jr., but because of his absence with the army, the execution of the work was carried out by his associate, Harry Creighton Ingalls.

House of James M. Leopold, Esq., East 80th Street, New York. Plates 78–80. This house has been kept in the English style throughout. The plan of the house is most unique and the architect is probably the originator of the idea of a large lofty room in a small house, through eliminating the middle foyer containing the staircase, which nearly always is dark and wasteful. The large living room on the second floor thereby gained is probably the largest room in any house on a lot of this size in New York City. The difference in floor levels is due to the fact that the basis of the work was an old house, the levels of which were maintained in the rear section of the building for the sake of economy.

EDITORIAL COMMENT

THE architectural profession perhaps more than any other can look with great satisfaction on the signing of the armistice which brought hostilities stretching over a period of more than four years, accompanied by inestimable loss, to a close. The whole period of the war has been one of depression to architecture; with the opening of it came the era of high prices and demand for capital in manufacturing pursuits with promise of large return, that greatly curtailed building; with the entry of our own country into the conflict, the complete wreckage of private building was accomplished. These occurrences were of course inevitable in the emergency which developed. On the other hand, what private interests failed to do in building, the Government more than made up in an era of construction, the scope of which the world had never before seen. Fate, however, intervened and active participation in this work was denied the architectural profession. It is true that when we reached the housing problem architects were considered necessary, but this constituted only a fractional part of the total work undertaken by the Government, and if a true knowledge of the profession had been in the possession of those in authority, the necessity of architects in other phases of war building would have been as clearly seen.

The chapter is now closed, however, and while the opportunity was lost to the profession, we are certain that a far greater opportunity was lost to the Government and people. Our participation in the war was fortunately not as long as we expected and there was not sufficient time in which to prove definitely that many of the contentions architects held concerning the character of Government work were well founded. There is, however, the satisfaction of knowing that in the few instances where architects were retained, the results speak for themselves. A few of the naval camps had the benefit of architectural advice in their ground layout and development of buildings; they stand out conspicuously for their efficient arrangement and the high morale of the men who were trained in them. Further satisfaction may be had from the fact that the great proportion of the work is temporary; it will not continue to stand as an influence on future work.

If architecture was not permitted to don the uniform and serve with the colors, it has nevertheless a big field to fill. It is the basic art of the people; no one is so lowly that it does not touch his life, unconsciously to him, perhaps, but it is, notwithstanding, constantly exerting that uplifting influence which is necessary for our development as a people.

We are now at the threshold of the period of reconstruction, and the opportunity of the architect lies before him. It will most likely be a gradual readjustment; we cannot expect normal activities to resume at once. The action of the Government in removing all restrictions on non-war building on November 21 indicates, however, a favorable outlook; this action was not taken hastily, but after careful analysis of the supply of materials, fuel and transportation facilities in the different states.

AT the Convention of the American Institute of Architects held last April it will be recalled the article in the Canon of Ethics relating to advertising was repealed, the consensus of opinion among the delegates being that advertising was a matter of taste, and as such could not successfully be controlled through legislation. We had expected the first evidence of the removal of this restraint would be in the form of educational work undertaken through the popular medium of the daily press by associated bodies of architects, but the first instance to come to our attention is an advertisement of an individual firm of architects.

In *The Bankers Magazine* for October, 1918, Messrs. Mann & MacNeille, architects, of New York, are represented by a half-page announcement which in a dignified and straightforward manner indicates the type of service they are prepared to render. It is generally conceded that advertising professional services is an extremely difficult thing to accomplish successfully. Without any existing precedent to guide them, however, these architects we feel have adopted a type of announcement eminently in character with the high standards of the profession and one that will create an impression of confidence and respect, not alone for the firm making the announcement, but for the whole profession. After a brief description of their organization and the duties they assume in protecting the client's interests, they list the types of architectural work on which they are able to give expert service and, opposite, the names of the chief executives and designers.

Advertising has grown in a comparatively short space of time to envelop many desirable forms of publicity. It has proved a valuable factor in the building up of American business and has exerted, probably, as great an influence as any other in raising the standards of general business to the high levels which we know today. It was inevitable that it would eventually merit consideration by the profession. Architects are entirely dependent upon their professional reputation in securing commissions, and some form of publicity that will aid in making them known becomes essential today. A general use of constructive publicity should be extremely valuable in acquainting the public with the duties of an architect and it will not endanger the respect in which the profession is now held, if guided by the dictates of good taste inherent in its members.